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THIRD

ANNUAL REPORT

OF

THE PRESIDENT AND DIRECTORS

OF

The Chesapeake and Ohio Canal Company,

MADE AT THEIR THIRD ANNUAL MEETING,

ON

MONDAY, JUNE 6, 1831.

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THIRD

ANNUAL REPORT.

Third Annual Report of the President and Directors to the Stockholders of the Chesapeake and Ohio Canal Company.

On the 7th of June, 1830, the Second Annual Report of the President and Directors disclosed to the Stockholders the actual condition, at that period, of the various interests of the Chesapeake and Ohio Canal Company, embracing a detailed account of the receipts and disbursements of the funds of the Company, and of the operations on the Canal, from their commencement in the Autumn of 1828, to the last day of the preceding month.

The President and Directors proceed to bring down this detail to the 31st of May, of the current year, and to superadd whatever information they can supply to the Company respecting the general interests of the work confided to their charge.

From the subjoined table of Receipts and Disbursements, it will appear that since the organization of the Board there has been paid into the Treasury the sum of \$1,740,205 46, derived from the following sources:—From the late Potomac Company, being the unexpended funds in the hands of that Company at the time of its dissolution; from the Commissioners of the United States and the States of Virginia and Maryland, by whom the books were opened to receive subscriptions to the stock of the company, being the amount paid to them at the time of taking the subscriptions; from the Stockholders on the subsequent instalments called for by the President and Directors; from tolls collected both before and subsequent to the opening of the new canal; from the sale of old houses, &c. which were upon the ground required for the canal; from materials sold, not required in the construction of the canal; from interest and gain on the sale of the Maryland stock; from interest and law charges recovered from delinquent stockholders; from two unexpended balances of money which had, in different years, been placed in the hands of the President for paying the amount awarded by the Jury, on lands condemned in Frederick County, and certain expences in the suit of the Baltimore and Ohio Rail Road Company against this Company depending, at Annapolis; and from a loan from the Corporation of Georgetown, in anticipation of future instalments.

date 30 Sept 39 Time = 3d, 4th Reports 14 Oct, 39

Out of these receipts, there has been disbursed for the construction, improvement, and repairs of the canal, including \$1,953 25 paid for materials, over and above those supplied by the contractors themselves, the sum of \$1,539,521 33 leaving \$200,684 13, to be otherwise accounted for.

Of this, the sum of \$78,584 62 has been paid for lands required, either by the canal and its appurtenances, or to avoid the necessity of bridges or ferries across, or of viaducts beneath it.

The further sum of \$73,273 63, part of the above residue, covers the three years' expenditure, including the pay, instruments and contingencies of the Engineer Corps. Part of this expenditure, along with a sum of \$4,026 08, and a part also of the sum of \$5,053 24, expended for stationery, postages, and printing, including advertisements and notices, is chargeable to the completing of the survey, and the acquisition of lands for the future construction of the Western Section of the canal; making the total amount hitherto applied to that object \$6,822 72.

Under the head of the Potomac Company, the sum of \$2,949 81, has been applied to the repairs of the old canal and the pay of the keepers of the old locks at the Great and Little Falls—\$5,089 45 have been disbursed under the head of Law Expenses, on account of Clerks' fees, and the opinions and arguments of counsel, \$166 95 have been disbursed on account of interest on sums borrowed, or received from subscribers in anticipation of instalments called for—the sum of \$5 55 has been paid on account of dividends of the Potomac Company, hitherto unclaimed, and \$17,982 29, on account of the salaries of the officers of the company; and \$5,494 35 for contingent expenses.

These various amounts leave the total receipts and disbursements of the three years, to be balanced by the deposits of the company in various banks, amounting at the date of the last Treasurer's Report, to \$10,388 35, subject to a deduction of \$130 19, overdrawn from one of those banks.

In aid of this sum, a further call upon the stockholders for 2½ per cent. on each share of subscribed stock, making in all 50 per cent., has been recently advertised. This, with the further aid of the outstanding balances of prior calls, will constitute a fund for the prosecution of the unfinished works of the canal under contract. Which fund may be aided by the sale of certain lands held by the company, to purchasers who will take them, with a release of any right to a bridge or a ferry across the canal.

At the period of the last year, corresponding with the present, 6,000 laborers, and 700 horses were employed on the canal. By the latest returns, the number of the former is reduced to 1,326, and of the latter to 276. Every week, the extent of the work to be completed is diminished, by the return of final estimates upon that which is done.

Till the month of November last, the only benefit afforded to the navigation of the valley of the Potomac, by the new company's

works, was limited to the enlargement of the old canal around the Little Falls ; and the sinking of two culverts beneath it ; by which, its frequent obstruction from the alluvial deposite of the adjacent hillsides during heavy rains was effectually prevented.

In that month, the canal from the intersection of the old, by the new line, up to the Seneca feeder, was opened for use. The heaviest embankments had been completed in a very dry season, and as on all new works of this description, the navigation was several times suspended by leaks and breaches, after the admission of the water, till the hard frost of January obstructed its use altogether.

The Board availed themselves of this season, to let out the water, and to finish the deep and difficult rock excavation of the thirteenth and thirty-fourth sections, which had been left incomplete by the last contractors. Early in March the navigation of the river was renewed by the breaking up of the winter ice ; but that of the canal, from Seneca to the Little Falls, awaited the completion of those sections, till the 21st of that month. Since then, its use has continued, with occasional but transient interruptions caused by slight breaches, improvements, and necessary repairs. The last have been required, on two sections chiefly, and in consequence of too much loose stone, having been permitted to be thrown and to lie together at the bottom of the canal, prior to its being levelled with compact earth.

Early in the late Spring, the navigation of the canal was extended a mile below the old locks, at the Little Falls ; and, more recently, a mile farther, below the viaduct, a few hundred yards above, and within sight of Georgetown, whence a passage-boat carrying the United States' mail now daily plies, as high up as Seneca, in connexion with two lines of public stages, which pass over to Leesburg, in Virginia, crossing the Potomac, at Edwards's Ferry.

The works between the present termination of the navigation and the basin next the tide-lock, designed as a harbor for the canal boats, are in such forwardness, as to ensure the extension of the navigation, during the present month, to the market house in Georgetown ; and it is certainly possible, and therefore, confidently hoped, that, by the approaching 4th of July, a boat may pass through the tide-lock in the mole erected across the mouth of Rock Creek, by the summit of the Granite Ridge, which runs out at Seneca, into the level of the feeder, entering the canal, from the river, at the foot of the 24th lock, above tide water.

The masonry of this, and of the adjacent guard-lock, has been for some time finished, as is very nearly that of the next lock above it, and of the aqueduct of three arches across the mouth of Seneca, with which it is united.

Of the three locks, in the 25 miles of canal above Seneca, that, opposite to Edwards's Ferry, is nearly completed, and the two between it and the Point of Rocks, have their foundations laid, and so far built upon, as to ensure their completion in a few weeks.

The culverts on the same line of canal have long been placed under contract—several of them are finished—others are nearly so—

and all have been begun with facilities for their construction, which justify the confident expectation that they will be done, by the end of the present Summer.

The various sections, yet unfinished, of which those works constitute a part, in length about 26 miles, are all either completed, or so far advanced as to assure their completion within ninety days from the time when the contractors shall be required to deliver up their contracts.

The aqueduct of seven arches, of fifty-four feet span each, across the Monocacy, has been three times let, the contract for its construction having been once abandoned, and once transferred by assignment. It is now in the hands of an efficient contractor, who, by the terms of his agreement, is allowed till November next for its construction. The red free stone first chosen for this work having proved defective, it is required to be built of a white granite; for the transportation of which, the contractor has found it necessary to construct a railway, exceeding two miles in length. This stone is quarried with facility, but it is so hard as to require great labor to cut it, and the contractor has experienced delays, from various accidents, not the least formidable of which, was the bad state of the road from the river to the quarry, which drove him finally to the construction of the railway, and the frequent freshes of both the Potomac and the Monocacy, which have since often arrested the progress of his masonry. The foundations of the piers are laid and secured to the rock on which they stand; the abutments and several of the piers are ready for the centers, one of which is up, and the arch now turning upon it. A doubt, notwithstanding, exists, that unless the ensuing Autumn shall prove more healthy than the last, this work will not be ready for the admission of the water through it before the end of the next Spring. That it will be then finished is confidently expected.

When done, the inquiry will arise, from whence is the water for this part of the canal to be had?

Various expedients have been suggested, and considered by the Board, without a conclusive judgment having been formed on the subject.

Had the citizens of Frederick co-operated with this Company, a branch canal of twenty-nine miles in length, conducting the Monocacy through their city, would have supplied this part of the main stem with water, from a level of about eight miles, next the Potomac, serving both as a feeder and a canal.

The Board hesitated to construct such a work for the sole purpose of a feeder, since it might be dispensed with after reaching Harper's Ferry, by a dam, immediately below which, the United States' Engineer, and Messrs. Geddes and Roberts, also, proposed to supply this part of the main canal with water.

Another plan was submitted to the Board. To erect a dam across the river below the Point of Rocks of such elevation, as to raise the water about nineteen feet above its ordinary level, and by a feeder, to force it into the canal; or, if preferred, to construct, at the same

place, a dam of less height, and hydraulic machinery, to elevate the necessary supply of water to the level of the canal; and by ascending locks, to provide admission for the river boats.

Could the expense of the whole or a part only of such a work be defrayed by the sale of the surplus water, which it would place at the disposal of the Company, very little, if any, doubt could be entertained of the expediency of this temporary substitute for a feeder, from the Shenandoah and Potomac, immediately below Harper's Ferry.

A third, and more limited suggestion, has been also considered, which, if adopted, could be speedily reduced to practical use; the introduction into the canal, of the Tuscarora, from above the Great Monocacy, and of the Little Monocacy, Broad Run, and several smaller streams from below, so as to provide a navigation less constant, but, at the same time, of much convenience to the adjacent country; and a quantity of water sufficient to fill the canal up to its intended level, so as to preserve its inner slopes from washing in hard rains.

The same spirit, which suggested these various substitutes for the extension of the canal above the Point of Rocks, where it has been so long impeded by the injunction of the Rail-road Company, induced the effort, on the part of this Board, to compromise with that Company, so much of the ground of dispute between the two Companies, as should enable both, in conjunction, to reach Harper's Ferry. For the origin, progress, and termination of that compromise, the Board beg leave to refer to the accompanying printed correspondence.

It began, as is known to the President and one of the Directors of this Board, in a tender by the President of the Rail-road Company, of a compromise which he particularly desired should respect only the ground below Harper's Ferry, but was finally extended with his consent and that of this Board, to Williamsport. It ended, as the correspondence itself will shew, in a resolution of the President and Directors of the Rail-road Company, to make no compromise, which should be limited, in extent, to a point short of Cumberland.

For the grounds on which the Board refused to accede to this unexpected ultimatum, they beg leave to refer to the official letter addressed in their behalf, by the President of the Board, to a Committee of the House of Delegates of Maryland, and to the letters of the Civil Engineers, Messrs. Roberts and Cruger, written in conformity with their depositions, taken under a commission from the Chancellor of Maryland, to be read in evidence in the suit still depending at Annapolis.

To the objections, that the lines of interference between the two Companies have, but their beginning, at the Point of Rocks, and that occupying two, out of the twelve miles below Harper's Ferry, they cover between Cumberland and the mouth of the Shenandoah 45 out of 126 miles: that, to re-survey and endeavor to adjust, in connexion, the location of the two works for all this distance, would, as their Engineers proved, consume several years; enhance the cost, and augment the hazard of the canal; greatly impede, if not absolutely prevent its future repairs, and, according to the proposed

plan of compromise, cut it off from all intercourse with the territory of Maryland above the Point of Rocks; might have been added, the same objection, in relation to the obstruction of the communication with Virginia; since, between its tow-path and the margin of the river over which the produce of that State must pass, in order to reach the canal, there would not, for several miles together, be space enough to land and transfer it to the boats; while, on the opposite or berm bank of the canal, converted into a rail road, the canal would be cut off from approach wherever the Baltimore Company pleased to construct their rail road, as allowed by their terms of compromise, within eight feet of the canal.

Reluctantly yielding to the necessity imposed on them by the decision of the Chancellor on a motion to dissolve the rail-road injunction, of submitting to a fourth survey of the line of the canal, the Board attempted in vain to expedite that survey by multiplying facilities for conducting it, till, perceiving from its very nature, apart from the numerous obstructions to which it would be liable, that it must consume many years, and be accomplished, if at all, at great cost, they determined to rest the final decision of the Company's rights, on the facts repeatedly manifested by the prior surveys of the same ground, made under high authority, and again demonstrated by more recent proof, that a canal and rail-road could not be conducted in juxtaposition, along even the four very short, but difficult passes, below Harper's Ferry, without a reduction of the required breadth of its surface, the augmentation of its cost, as well as its hazard; and a diminution of its expected utility; and, consequently, of its future profit.

These effects were so fully disclosed by the evidence of Messrs. Roberts and Cruger, as to leave the Board no room to doubt but that the Chancellor would dispense with the farther prosecution of the joint survey, and decide the controversy between the two companies, on its merits, without further delay.

In this expectation, this Board has not been disappointed. It is with great satisfaction, that they apprise the general meeting of a recent order granted, as they understand from their counsel, by the Chancellor of Maryland, requiring the Commissioner, authorized nine months ago, at the instance of the Rail Road company, to take depositions in this suit; to return to court the evidence he had taken, and that the Chancellor had notified both companies that he will be ready to hear and decide their case upon its merits, on the 15th day of the present month, provided they are both prepared for trial.

One benefit, if no other, will result from this notice; the effect of which, it is understood, that either party may delay. It will supply a test of the sincerity of that declaration of the President and Directors of the Baltimore and Ohio Rail Road Company, so often reiterated, that they desire a speedy termination of this unhappy, and to this company, a like unexpected and injurious controversy.

As the court of Appeals of Maryland will sit in Annapolis in this month, if that shall not defer the expected trial in chancery, the ac-

cordance of the time of session of the two courts, may lead, by possibility, should there be an appeal from the Chancellor's decision, to a more speedy settlement of the depending controversy.

Besides the various expedients which have been stated, all more or less costly, of obviating some of the inconveniences arising from the impediments thrown in the way of the canal above the Point of Rocks, it has been recently proposed to the Board, in anticipation of the speedy action of the tribunal of last resort, in this case, to take preparatory steps for completing the canal, on the ground, which they confidently believe the justice of Maryland will ultimately throw open to them. These steps would consist in immediately placing under contract the dam below Harper's Ferry, and the locks to be constructed between it and the Point of Rocks, that the materials of both may be in readiness and the former progressing, when the suit shall terminate. The dam will be required, whichever shore of the river the canal may ascend, and the stone prepared for the four locks, could be transferred according to the issue of the controversy, to the shore to which it may restrict the Company, or to that which they have long since chosen, because of its south exposure, its more even surface, and the necessity it avoids of crossing the Potomac twice, and the Shenandoah once, by very expensive and hazardous aqueducts.

From the character of the canal already completed below the Point of Rocks, and especially of that part of it between the 11th and 33d sections, as well as in the vicinity of Georgetown, it must now be apparent that the early assurance given to the public, that the entire eastern section could be finished in three years from its commencement, might have been realized, provided no legal obstruction had impeded its progress, and adequate funds could have been provided.

It is as confidently believed, that nothing more is necessary, in order to manifest the superiority of the Chesapeake and Ohio Canal, to any other mode of transportation applicable to the valley of the Potomac, than to bring it into actual use above the obstructions of that river, at Harper's Ferry.

The annexed tables, presenting an exhibit of the cost of each section of the canal, from the tide-lock in the mole at Washington, to the Point of Rocks, and of the estimated cost of the twelve miles above that point, which remain to be constructed, in order to reach the mouth of the Shenandoah, will show that the work above Georgetown, done and to be done, on the first sixty miles of the canal, will cost about 30,000 dollars a mile, exclusive of contingencies. In one of those tables, a comparison is instituted between the actual cost of this work, and the estimate made of it by the United States' Engineers, who terminated their calculations at Market-street, in Georgetown; where they proposed to form a basin, and to which therefore this comparative view is made to descend.

For the sake of any inference which may be drawn from this comparison, it should not be forgotten, that the breadth of the canal at the water-line was designed, by the United States' Engineers, to be 48 feet, its bottom 33 feet, and its depth 5 feet : of which they say,

“this transverse section is to be modified, where local circumstances require it, and more especially in the cases of deep cutting, steep side-cutting, embanking, and also where the canal is supported by walls. The depth of 5 feet has been preserved throughout the line, but the breadth has often been much lessened.”

The actual canal, on the contrary, is 60 feet wide, at the water-line, 42 at bottom, and 6 feet deep, and has been reduced in breadth below these dimensions, though all the above contingencies frequently occur in its course, for less than a single mile altogether, of the 48 now very nearly completed. It is, indeed, much more frequently enlarged than reduced : it is never less than 6 feet deep ; and where its breadth, as for the four miles next above Georgetown, is less than 80 feet, its depth is extended to 7 feet below the top-water-line, forming a cross-section, throughout, of about ~~four~~ feet below water.

To compare these two canals together, the surface of their respective tow-paths and berm-banks being, with the same inside slope, two feet above their water-line, it should be considered, that their entire cross-sections, or mean breadth, multiplied into their depth, are to each other as 432 to 304.6 ; and the cross-sections of their water-prisms, where the larger is only 6 feet deep, as 306 to 202.5.

The breadth of the tow-path of the larger canal is, also, constructed two feet wider than that required by the estimate of the smaller ; the culverts of the larger are never reduced to a less length than a canal of 60 feet breadth requires : all of them are constructed, where practicable, so high, as to enable a laborer to walk erect through them, and several are enlarged to dimensions which will permit loaded wagons, and all other conveyances for persons or commodities, to pass under them. The locks are four feet shorter than those recommended by the United States' Engineers ; but they are, at the same time, a foot wider and a foot deeper ; and they are all constructed of cut-stone masonry, laid in hydraulic lime, without any use of common lime, except in the backing of a few of them, where, in the facing, the English Roman cement was freely used. Grubbing will be found not to have been included in the estimate of the United States' Engineers, nor the incidental expenses of excavating and embanking the locks, constructing houses for lock-keepers, nor the necessary improvements developed, on opening the canal, by the admission of water. These items in the table swell the cost of the actual canal 110,000 dollars ; on the other hand, the cost of but one permanent bridge, and an allowance of 4,400 dollars for that and the bridges above the market-house in Georgetown, are included in the cost of the part of this canal above that town, and the cost of fencing, estimated by the United States' Engineers at 54,900 dollars, although not included in the actual cost of the work, is comprehended, in part, in the indemnities awarded by juries, the compensation voluntarily agreed on, or the prices paid for the land purchased of the adjacent proprietors in behalf of the company.

The United States' Engineers considered their estimate, moreover, as possibly covering the usual allowance of five or ten per cent. for

unforeseen contingencies—some of which are comprehended in the cost of this part of the actual canal, and others of which have been already noticed in this report.

As might have been expected from the enlarged dimensions of the area and embankments of the new canal, the quantities of the work estimated, and done, essentially and greatly vary. The cubic yards of embankment estimated by the United States' Engineers, for the canal below Harper's Ferry, amounting to 743,580 yards, and, if the puddling be added, which does not seem from the estimate of its cost to have been designed to affect the quantity of the embankment, to 1,056,710 cubic yards; while the actual embankment, including the puddling, as the calculation requires, added to the estimated quantity of that remaining to be done, amounts to 1,056,760, exclusive of the embankments around the locks, which are separately charged in account, and amount to no inconsiderable sum.

The excavation and the walling are, in quantity, nearly the same, though differing in cost near ~~\$250,000~~. The walling of the actual canal exceeds that of the estimated, less than 14,000 cubic yards, while the computed cost of the latter surpasses the actual cost of the former, near \$500,000. Ninety-six culverts are provided for in the estimate; eighty-one in the canal; but the disproportion between the aqueducts in breadth, arises from the different denominations given to them: the aggregate cost of both, on the two canals, varying less than 4,000 dollars, notwithstanding the much greater breadth of the larger canal, and the peculiar difficulties attending the construction of the aqueduct across the Monocacy, which surpasses in the size of its arches, and exceeds in length, as does that at Seneca, the dimensions for which an estimate is given by the United States' Engineers. 74

The total difference presented by this table of the cost of these two canals is, subject to the preceding explanations, 677,184 dollars, on an expenditure actual and estimated, of 1,848,941 dollars: and this, notwithstanding the great enlargement of the area and embankments of the cheaper canal.

These facts and comparisons are presented to the Stockholders, and to the public, in no spirit of triumph, over the very eminent, disinterested, and highly honorable Engineers, by whom the first estimate of this work was made; it is well known, and gratefully acknowledged, with no unfriendly feeling towards its future progress. This progress, indeed, their very errors, are calculated to promote: for, having accustomed the public mind to so large an estimate of this work, they have laid the foundation of its ultimate success, by the contentment with its actual cost and plan, and, it is believed, with its construction also, which, whatever dissatisfaction may elsewhere prevail, must finally pervade its early and steady patrons, as well as the subscribers to its stock.—(See Note A.)

This comparison will at least disprove, and such is one of its purposes, the allegation, recently repeated, after reiterated contradictions, that the actual cost of the Chesapeake and Ohio Canal had not

fallen short of that estimate by which the construction of its eastern section of 186 miles, ending at Cumberland, was made to reach \$8,177,081 05, and its total cost to Pittsburg, \$22,375,427 69.

But, lest advantage shall be supposed to have been taken, in the comparison just closed, either of the easier ground along the bottoms above Senaca and the Monocacy, or of the mere estimate of the work, not, as yet, begun, between the Point of Rocks and Harper's Ferry, the Board especially invite the public attention to the portion of the canal which is not only completed, but has now been in actual use for several months: and, of this, to the tenth subdivision, which extends from the head of the Great Falls, to tide-water, at the old locks below the Little Falls.

The accompanying table, distinguishing the several subdivisions of the canal from the 7th, beginning at Harper's Ferry, to the 11th, ending at the market-house in Georgetown, gives to the 10th a length of 11 miles 1023 yards, in the estimate by the United States' Engineers, and 10 miles 1005 yards, in the actual canal between the same termini; a difference occasioned by a change of the location for about three miles and a half of the way. The difference of cost, after deducting from the estimate the computed expense of the locks transferred from the 10th to the 11th section, on this subdivision of the canal, largely exceeds 200,000 dollars. While the actual excavation and embankment, together, of the new canal, surpass, in quantity, the estimated quantity of earth and rock 124,000 cubic yards, the walling 27,463 perches, the actual cost of the three items, is less, on the larger canal, than in the estimate for the smaller, by 265,985 dollars, although the embankment of the larger subdivision exceeds that of the smaller in cost, 56,747 dollars; and in quantity, including the earth puddled, in the ratio of very near two to one. If the quantity of puddling should not be added to the quantity of the earth estimated in this ratio, which is believed to be correct, then this ratio will be as 529,933 to 150,860, or will considerably exceed 3 to 1.

To guard against the supposition that this part of the canal passes over easy ground, here follows the description of it by the United States' Engineers in their own language, to be seen in the 49th page of a Congressional document.

"Subdivision 10th. From the Head of the Great Falls to tide, below the Little Falls.

Distance, 11 $\frac{3}{4}$ miles—descent, 173 feet—22 locks.

From Cumberland, 183 $\frac{1}{2}$

578 74

"The breaking of the Potomac through the granite ridge, at the Great Falls, presents, at first sight, difficulties of the greatest magnitude. The river gradually narrows its channel as it approaches its perpendicular pitch. At this point, and a little below, the width does not exceed one hundred yards, at a moderate stage of the stream. Here the perpendicular rock, 60 or 70 feet high, forming the banks, the deep water at their foot, the violence and great rise of the freshets, render truly appalling the idea of supporting a canal along this pass by means of walls. Most happily, there is no necessity for such a

plan: a ravine, or rather two ravines, which can be rendered continuous by comparatively little labor, extend for the whole distance between what is termed Bear Island and the high bluffs forming the Maryland shore.

"This fortunate circumstance will not only enable to make the canal here at much less expense than through the pass of the stream, but it will also procure to the work a security which neither ingenuity nor expense could afford on the other alternative.

"Below the Great Falls, the ground, with the exception of some portions of easy execution, is generally difficult, requiring a large extent of walling and of steep side cutting, for about seven miles: it is to say, as far down as the head of the actual canal round the Little Falls."

Although the location of this line was improved by subsequent examination, yet on no canal in America, and on very few, if any, in the world, will there be found, and certainly on no part of the Chesapeake and Ohio Canal, do there remain to be encountered obstacles more appalling than have been here overcome: so they were regarded by the distinguished foreign Engineer then at the head of the United States' Board of Internal Improvement, whose language has been quoted above.

In the compass of eleven miles, along precipices of granite, bounding a river which bore last winter on its bosom ice and snow, elevated, for several miles, thirty feet above its ordinary height, a canal was to be constructed, to overcome a rise of 128 feet, being more than eleven feet in each mile. For a part of this way, a practicable pathway could not be formed but at great cost; and many hundred acres of huge and craggy rocks, piled on each other, chilled the enterprise which attempted to subdue them. Earth was to be derived from remote distances to construct embankments, and the embankments to precede the transportation of the stone and other materials required for the construction of six of the sixteen locks. The beds of not a few of these were either to be sunk in the uneven rock, or to be lifted up high above it, and sustained by lateral walls and embankments. It is not wonderful that the United States' Engineers, who first traversed, described, and estimated the route for this canal, along the north bank of the Potomac, around the Great Falls, should have estimated its cost at near 80,000 dollars a mile, supposing their canal to be forty-eight feet wide at the surface of the water, and five feet deep, except where "*reduced considerably*," as often as peculiar difficulties, which here occurred at every step of their way, required that breadth to be diminished.

But a reproof is given to those persevering misrepresentations, which swell the actual to very near the estimated cost of this work, by the spectacle of a canal in use between the same termini on the Potomac, completed at a cost of 20,000 dollars a mile less than that estimate—constructed, too, with a breadth exceeding every where in that distance, forty-eight feet, often more and seldom less than sixty feet, and a depth never short of six feet—having, beneath it, numer-

ous culverts, some large enough to serve as viaducts to every species of conveyance ; with sixteen cut stone locks, laid in hydraulic lime—seven of which are of hard granite blocks, and nine of free stone, transported from 10, to 60 miles, by water and land ; while the canal, itself, is, for several miles of the eleven, lined along one or both of its inner slopes with a neat stone pavement, supported on the outside by massy walls sixty feet high, to guard it from abrasion, and has, moreover, included in its cost, more than 22,000 dollars expended on its improvement, exclusive of its repairs, since the opening of its navigation.

Several benefits would accrue to the Chesapeake and Ohio Canal Company from a close analysis of the causes of the actual, compared with the estimated cost of this enlarged and difficult line of canal. Among them, would be, a general conviction that too much has not been expended in repeated surveys, by eminent practical civil engineers, preparatory to its final location, nor if the number, variety, and quality, of its works be regarded, in multiplying, to the necessary extent, the corps of engineers, by whom its actual construction was to be vigilantly and constantly watched.

With all this circumspection, not one of those engineers believes, nor any officer of the company will maintain, nor do the President and Directors pretend, that errors have not been committed in the location, as well as the construction of this work ; by the timely correction of which, if perceived, its cost might have been reduced, and its strength, as well as its appearance, improved.

To alter the location is now impracticable, but at a cost wholly incommensurate with its end : but the errors here adverted to, in the construction of the canal, are in a train of correction, and will be obviated, it is believed, effectually, without any serious inconvenience, or much additional expense.

Those upon the 10th subdivision have already been corrected at the cost stated in the table ; the residue occur chiefly, if not solely, in, and immediately above Georgetown, in relation to two locks, and a culvert serving as a viaduct. One of the wings, near the footing of each of the former, and the ring stone of the arches of the latter, are here referred to : the latter should have been of granite, and the former more effectually secured, as they will be very speedily.

There can be no question, but that the part of the canal already completed, exceeds in difficulty, and will be found to have surpassed in cost that part of the Eastern section which remains to be executed ; and, consequently, that no authority can be deduced *from experience*, against that estimate of the cost of this section, which was presented to the stockholders by the last annual report of the Board of Directors.

Between Harper's Ferry and the Basin of Washington and Georgetown, 31 of the 72 lift-locks of this section occur ; so that 248 feet of the entire elevation, from the tide to Cumberland, will have been surmounted in the first 60 miles of the 186 which constitute the entire Eastern section ; making, if this proportion be examined, a dif-

ference of more than \$ 3000 per mile, for lockage only, in favor of the part of the canal above the Shenandoah.

In the single material of hydraulic lime, required for every species of masonry exposed to the action of water, and absolutely necessary in the construction of durable locks of stone, not less than the farther saving of \$ 500 will be effected on the cost of each lock, by the reduced price of transportation.

Stone, if not more abundant, will be found more conveniently distributed, above the Blue Ridge, than below. Outward protection walls will be often required, and for considerable distances above as below, but no walls or embankments, exceeding in height one-half of the elevation of those on 12th, 15th; and 18th sections of the work already completed. Much narrower dams across the river, as noticed in the former report, will be necessary to fill the feeders at and above Harper's Ferry. Above all, setting down at nothing the gain of experience, the general health of the valley of the Potomac, and the abundant supply of provisions and accommodation, which that circumstance as well as the superior fertility of the country, promises to the laborer above the Point of Rocks, will reduce the price of every species of work after passing that point.

If the company shall be permitted, by the Courts of Maryland, to conduct their canal along her shore, on the ground so often surveyed for its use, no aqueduct like that of seven arches of fifty-four feet span, across the Monocacy, will occur to swell the masonry to be constructed above that river. All the aqueducts and culverts of the 140 miles above it, will probably not exceed, in cost, those of the 44 miles below the ~~Monocacy~~. *Point of Rocks.*

Twenty-five thousand dollars a mile is, therefore, considered an ample estimate of the part of the Eastern section, in length 126 miles, above Harper's Ferry. This part of the canal will, therefore, require for its construction \$ 3,150,000, which added to the cost of that between Harper's Ferry and Georgetown, will produce very near the former estimate of \$ 5,000,000, leaving, as that estimate did, the works in that town, to be paid for by the peculiar uses of which they are susceptible, in the manner heretofore proposed.

To provide for the sale of the mole constructed of the surplus earth of the Georgetown excavation, and of such surplus water as may be drawn to the canal, by the dam across the river, at the head of the Little Falls, application was renewed, last Winter, to the Legislature of Maryland, and to the Congress of the United States, for their assent to the recent act of Virginia, granting all that the company had authorized the Board to ask, and to the former act of Pennsylvania, anticipating and providing for their wants.

The pressure of public affairs, of a general nature, in Congress, and of other matters prior in the order of business, concurred, with the local opposition in the committee to which the bill of the prior session had been recommitted, to delay till the end of the session any final decision upon it.

The views taken of the Virginia act, and of the memorial of the

company, by the General Assembly of Maryland, will be seen in an accompanying document, upon which the Board forbear to make any comment.

Time, which allows the passions to cool, and gives to knowledge fair scope for action, is the best corrective of popular errors, which are often confirmed, and exasperated by vigorous resistance.

It is not possible that the people of Maryland will long hazard a transfer to the shores of Virginia, of every manufacturing village, to which a judicious use of the surplus water of the Potomac might give rise ; or that both States will permit a source of common improvement, so fruitful of good, to remain unprofitable to either bank of the Potomac.

As to the sale of the mole in Georgetown, it was originally announced in the first annual report of this Board, to be one of the ends of its construction : and far from injuring the interests which started up in opposition to this measure, no application of the mole could be more beneficial than that proposed, either to the community at large, or to its opponents themselves, as can easily be demonstrated.

An attempt has, indeed, been made to represent the sale of the mole, thus early proposed, as some consolation to the stockholders, for its certain and heavy cost, as vitiating altogether the right to construct it, for its avowed and obvious use.

If this Board be correct in their views of both these subjects, the only loss which the company can sustain, from the delay of the other parties to their charter, in recognizing the justice and wisdom of the amendments proposed to it, by the Pennsylvania and Virginia acts, will be, the loss of interest on the dormant capital.

Even this loss admits of the consolation, that the capital itself, though inactive, is daily appreciating, as the value of the canal is developed by the use of its navigation.

The present funds of the company will certainly complete 120 miles of it, or carry it twenty miles above the point, necessary to the preservation of their charter ; and these, and other resources for the completion of the entire canal, will not be lost sight of, in the estimate of its ultimate success.

From topics less soothing, the Board turn with pleasure to the recent manifestation, by the patriotic commonwealth of Pennsylvania, of her continued interest in the prosperity of an enterprise deeply interesting, not to herself only, but to the whole American Union. The liberality with which the Legislature of Pennsylvania have recommended the appropriation, by Congress, of a million of dollars to the construction of the western section of the Chesapeake and Ohio Canal, is the more honorable to this commonwealth, since she is, herself, seeking to secure, to her great eastern emporium, that commerce, which every effort to connect, by inland navigation, the eastern and western waters of the United States, has a tendency to divide.

Another source of gratification is opened to the Stockholders of the Chesapeake and Ohio Canal, by this recent vote ; as well as by other late proceedings of the Pennsylvania Legislature. It is, that in a

commonwealth so distinguished for the number and excellence of its highways, designed for intercourse both by land and water, rail-roads have not superseded all sense of the superior utility of canals, where water exists in sufficient quantity for their construction, and other circumstances conspire to give to them a decided preference. The unabated zeal with which New York and Ohio are completing their magnificent systems of canals, strongly fortifies this authority.

It must be gratifying to the liberal friends of Internal Improvement every where, and especially to those who would avail themselves of the benefit of uniform transportation, in States already intersected by many navigable rivers, and abounding with streams that can be readily made subservient to the same end, to learn, from the recent experiments on the canals of Scotland, that the established theories which limited the velocity of navigation on canals, are giving place to the lessons of practical knowledge; the sure corrective of false philosophy in all physical science.

The compass of this already extended Report refuses admittance, into its text, of all the very interesting intelligence to be derived from the late work of Mr. William Fairbairn, addressed to Thomas Graham, Esq. of Glasgow, from which the following extracts are made:

They prove, beyond the possibility of doubt, that a velocity of 15 miles an hour has been attained on the Forth and Clyde Canal, which, although ten feet deep, is, in width, but three feet broader than the Chesapeake and Ohio Canal—that, on the Ardrossan Canal, one of the narrowest in Scotland, a velocity of twelve miles per hour has been attained, and that “eight persons and the steersman of a boat accomplished a distance of two miles, with one horse, in ten minutes, without any surge, or agitation of the water, injurious to the banks.”

The summary of the results from the first experiments on the Forth and Clyde Canal, embraced three objects, worthy of particular notice, as this author very justly affirms: “First, the ease with which boats were brought up, or stopped, when moving at a high rate of velocity; secondly, the little additional labor, in drawing, occasioned to the horse, when drawing the boat at this high rate, as compared with a low rate of velocity; and thirdly, the apparent diminution of the surge, or agitation in the water, at a high rate of velocity.”

Since these experiments, “a boat has been regularly plying between Glasgow, Paisley, and Johnston, on the Ardrossan canal,” and carrying “from forty to fifty passengers, at the rate of from nine to ten miles an hour.”

Other experiments have been made, on the Monkland, the Union, and the Forth and Clyde Canals, of Scotland, to two of which, made on the last of these canals, as far back as the 7th and 8th of July, 1830, the attention of the Stockholders is particularly invited, as they show that the velocity of the passage-boats on the Chesapeake and Ohio Canal, will not encounter peculiar or insuperable obstructions from its numerous locks. It has, as yet, but one permanent

bridge, above Georgetown, in a distance of 48 miles, and that is not only very elevated, but designed to be provided with a suitable draw.

"On Wednesday, the 7th of July, the *SWIFT*, a boat 60 feet long and 8 feet 6 inches broad, twin-built, and fitted to carry from 50 to 60 passengers, started from Port Dundas, at 16 minutes past nine in the morning, having on board 33 passengers (all men,) and their baggage. Proceeding through the Forth and Clyde, and Union Canals, she reached Edinburgh at 29 minutes past four in the afternoon. She thus made a voyage of 56 miles and a half in the space of 7 hours and 14 minutes. In the course of this voyage, she passed through 15 locks, 18 draw-bridges, a tunnel of 750 yards long, and over three long narrow aqueducts, and under 60 common bridges, which carry roads over the Union Canal. Her average rate of speed, during the voyage, was nearly eight miles per hour, including every stoppage."

"On the following day, Thursday, the 8th of July, the *SWIFT* started from Edinburgh, 22 minutes past nine, in the morning, and returning by the same route, with 33 passengers (all men,) and luggage, she reached Glasgow precisely at 4 o'clock in the afternoon—that is, in 6 hours 38 minutes: going, thus, at the rate of nearly nine miles per hour." "On both days the weather was most unfavorable, from much rain, and a strong gale of wind directly in her face, having been from the east on Wednesday, and from the west on Thursday." "When free from the locks, tunnel, and other impediments, the speed at which she proceeded varied from 6 to 12 miles an hour; and the extraordinary results of the previous experiments made on the Paisley Canal, and Forth and Clyde Canal, were again completely verified and ascertained during her progress through 113 miles of canal navigation. For, it appeared, that when she moved through the water at the rate of 6 or 7 miles an hour, there was a great swell or wave constantly in her front, and she was followed by a strong surge or wave, bearing against the bank of the canal. At these times, the hauling rope was tight, and the horses appeared to be distressed. But, as the speed was increased, the wave, or swelling of water in her front, sunk down; and, when the speed came to be about nine miles an hour, the swell entirely disappeared, the waters in front became smooth and level; the hauling-rope slackened, and the horses seemed easy; and little or no surge was to be seen on the banks behind the vessel."

On these experiments, the following comment is made by the same writer: "There appears, therefore, no reason to fear, that the banks of canals can ever be hurt, by increasing the speed of boats, to the utmost attainable height; and measures are in progress for increasing the speed of passage-boats, on the Forth and Clyde Canal, and the Union Canal; or, at least, of keeping it, during the whole voyage between Glasgow and Edinburgh, to the highest rate which has been already realized; and, thus, reducing the time consumed in the voyage, to five hours."

To these experiments, Mr. Fairbairn has added many others, which are referred to in the text, and more minutely described in the Ap-

pendix, of his very interesting work; and from them he deduces results confounding all the established theories "that the resistance to a body drawn along a line of water confined within the banks of a canal, did not appear to increase in the ratio laid down in theory; and that, while at a low rate of velocity, viz: at and under six miles an hour, the resistance to the progress of the boat, on a broad line of water, was considerably less than on a narrower line; on the contrary, at a high rate of velocity, say above ten miles an hour, the forces necessary to the propulsion of the boat, on a broad, and narrow line of water, appeared to be the same, if the advantage was not rather in favor of the narrow line."

From these observations, he was induced "to recommend, and the Forth and Clyde Canal Company to agree, to build a light twin iron steam passage-boat, to ply between Glasgow and Edinburgh," which, at the date of his publication, he was preparing to launch. "Her length is to be 68 feet, her breadth of beam $11\frac{1}{2}$ feet, her steam-engine to be of ten horse-power, the diameter of her paddle-wheel 9 feet," "and its motion calculated to give from 50 to 60 strokes in the minute; her whole weight 7 tons 16 cwt. and her draught of water 16 inches. She will accommodate from 100 to 150 passengers; her anticipated velocity will be from nine to ten miles an hour, and the cost, to the Canal Company, for the conveyance of a passenger, between Edinburgh and Glasgow, 56 miles, will not much exceed two pence; which," Mr. Fairbairn adds, "is not a fifteenth of the expense of the conveyance of the same person, at the same rate, supposing it attainable and maintainable, by horses."

Mr. Fairbairn says, "that however much I was persuaded that steam power was the cheapest for high velocities, and also for propelling vessels in canals, where the trade was regular, I was not till lately prepared to consider a steam boat, on a canal, as the cheapest for the conveyance of goods, where the trade was irregular, and where the boat had not only to contain a cargo, but at the same time to carry her own engine, and all the conveniences necessary for the application of machinery."

But he proceeds—"Mr. Grahame has lately put into my hands a letter on this subject, addressed to a shipping company, carrying goods along a line of canal 56 miles in length; the calculations contained in that communication are given in the Appendix, and seem to be decisive in favor of steam power. The company, to which this letter is addressed, have to pay for a quantity of horse power, sufficient to deliver forty tons of goods, at each extremity of this line, of 56 miles, every day in the year; besides a spare power employed chiefly in one particular branch of their trade.

"The sum they pay for each delivery is one guinea, each way, or at a rate of about one-ninth of a penny per ton, per mile, for the trackage of the goods conveyed. The company, in question, supplying the tracking lines, but, with this addition, the charge for trackage is not increased to one-eighth of a penny per ton, per mile.

"This," says Mr. Fairbairn, "is certainly a small sum, whereon

to effect a saving by a change of power ; but, nevertheless, it appears (from Mr. Grahame's and my own calculations) that not only such saving may be effected, but an additional saving of a large portion of time can be made, by the change from horse to steam power."

"The calculations there referred to, make it quite unnecessary," adds the writer, "to say any thing on the subject of *steam power*, as a substitute for trackage, on canals. If it be so much cheaper than horses, in the expensive shape of a moving and carrying power, *united in the same boat*, what advantages may not all canals derive from its introduction, in the cheap form of a tug-boat, in place of horses?"

In his Appendix, the author adds—"I am the more convinced of the efficacy of steam trackage, above all others, from the circumstance that the train of boats intended to be towed, would follow in each others wake ; as the eddy formed by the leading vessel materially lessens the resistance opposed to the succeeding boats." "The small amount of power required to tow a vessel, was remarked by Mr. Grahame, in his account of the voyage of the Cyclops, from Al-loa to Port Dundas:" he states, "When we brought her into the canal, we attached her to the passage boat, and she drew her along the canal two miles—one mile in fourteen, and the other in fifteen minutes. We then detached her from the passage boat, and did two other miles, but could not save, by this decrease of labor, more than a minute, or a minute and a few seconds, in each mile. One thing is very evident," says Mr. Fairbairn, "that the introduction of steam, instead of animal power, would dispense with the annual repairs and maintenance of the horse paths ; the complaints and delays arising from drivers, horses, &c. would be avoided, and many contingent expenses saved by the introduction of this never-failing and very effective agent, as a moving power for the towage of boats on canals."

The great importance of the facts and views supplied by the work of Mr. Fairbairn, of which, it is believed, but very few copies have reached the United States, will constitute, it is confidently hoped, a sufficient apology for the copious extracts here made from it. If this work shall serve but to invite the public attention to the erroneous, but prevalent opinion, that no further improvement can be made, in inland navigation, by canals, because, sustained by monopoly, they have been so long stationary, this notice of Mr. Fairbairn's work cannot prove useless, since experience, as he has incontestibly shown, is exploding the doctrines on this subject, hitherto sustained, without exception, from any quarter, by the exclusive advocates of rail-roads.

But this Board does not feel that it would discharge its duty to its immediate constituents, or to the public, who are interested in the completing of the great highway, which they have long been constructing, if they did not proceed one or two steps farther in this investigation.

In the course of proceeding to which a committee of the House of Delegates of Maryland resorted, last Winter, letters were cotemporaneously addressed, by the chairman of the committee, to the Balti-

more and Ohio Rail-road, and the Chesapeake and Ohio Canal Companies, inquiring, among other topics, for which the undersigned beg leave to refer to the letter itself, "into the relative expense, benefits, and facilities of constructing rail-roads and canals, with a view of ascertaining to which of these means the funds of the State can be most beneficially applied." Their own answer to this letter, through the official communication of the President of this Board, will be seen in an accompanying printed pamphlet.

That of the Baltimore and Ohio Rail-road Company was made, in part through their Chief Engineer : and never having been seen by this Board, nor the report, of which it made a part, till since the adjournment of the Legislature of Maryland, the present affords the first occasion for referring to some of its very curious contents.

Reserving for a separate notice, the other subjects of the report, and, especially, those of a personal nature, *seemingly* designed, and certainly calculated, to reflect on the proceedings of this Board, they invite the attention of the stockholders of the company, and of the public, to the very singular use, among others, which the Chief Engineer of the Rail-road Company, has made of the joint survey for a rail-road and canal, along the difficult passes, four in number, somewhat less than two miles in extent, in a distance of twelve, between the Point of Rocks and Harper's Ferry, *in order to establish the superior economy of rail-roads to canals.*

The ingenious writer premises, "that, as a canal and a rail-road cannot be constructed, between any two points, on the same identical route, the evidence of their comparative expense, on a given line, must consequently be that of an estimate for each ; or, by an approximate conclusion, drawn from analogy." "I know," he adds, "of but one route, on which careful estimates have been made, at the same time, both for a canal and a rail-road. The *route* here alluded to, is along the Potomac river, from the Point of Rocks to Harper's Ferry; or, at least, *so much of that route* as was included in the narrow passes : " as was included, he should have added, in $1\frac{7}{8}$ mile, out of a distance of 12, along which no estimate whatever was made for a rail-road of any description. The survey of that engineer having been exclusively directed to those narrow passes, as the only lines of expected interference between the canal and rail-road.

But his conclusion far outruns his premises. "From these estimates, therefore, adding to the estimates for the rail-road an average price for the laying of three tracks of rail-way, on the graduated surface, so to be prepared, we arrive at results which will give the comparative probable expense of both the canal and rail-road. The canal was assumed to be of such dimensions, that, with a depth of water of six feet, its cross section should contain an arena" [supposed to be intended for area] "of 306 square feet. The breadth of the graduation for the rail-road was to be 30 feet." Hence, as the canal was to cost, at these narrow passes, "at the rate of \$79,036 per mile, and the rail-road constructed on wooden sills, but \$38,294 per mile ; or, after adding 1,000 or 1,500 dollars per mile for stone

sills, something less than \$ 40,000," the writer concludes, "on the whole, since the estimates for the canal do not include any lockage, although 40 feet elevation is to be overcome, between the Point of Rocks and Harper's Ferry, nor \$ 5,000 a mile," at which he is pleased to estimate the cost of lining the interior banks of the canal with stone, "a precaution," he says, "without which the experience of the Erie Canal shows that no such work can be considered as finished," "that the ratio of the probable expense of a rail-road and canal will, on the ground here estimated, be as two for the canal, to one for the rail-road."

So singular does his own conclusion appear to himself, that, to guard against criticism, he acknowledges, in his fourth commentary on these comparative estimates, that "he has not seen the last estimates for the canal on the *intermediate grounds*, (more than ten miles of the twelve,) and therefore cannot institute so strict a comparison with regard to them;" but he makes up for this deficiency of knowledge by a broad assertion, that "in the most favorable ground along the river bottom lands, the expense of the canal will exceed that of the rail-road from 25 to 50 per cent."

Whether this reasoning proved satisfactory to the individual, the President of the Baltimore and Ohio Rail-road Company, to whom it was addressed, and by whom it was transmitted, without comment, to the committee of the House of Delegates of Maryland, does not further appear, any more than does the effect, it may have produced, on the committee or on the House. But such reasoning is so extraordinary in itself, and so contradictory of known facts, part of which are supplied by the author himself, that it is difficult to reconcile it to his high reputation for candor.

The spaces, along which, the four short lines of Canal and Rail Road were expected to come in collision, the longest of which is in length but 3,052 feet, and the shortest 1,126, are four difficult projecting cliffs of rocks, hemming in the current of the Potomac, at the bases of the mountains and ridges, by which it descends, from the Blue Ridge through the Kitoctan mountain. The Rail Road was to be bedded on these rocks for a space of 30 feet only in breadth. The canal, having a cross section of 306 feet, and a depth of 6 only, could not have a breadth at the surface of less than 51 feet, and adding 3 feet for the stretch of the inner slope of earth, next the river, 12 for the breadth of its tow-path, and 20 for the horizontal stretch of the outward slope; supposing that the tow-path bank is not higher, above its base, here in the river, which is improbable, and that the angle of the slope is as steep as 45°, which would be inexpedient, we have a space constructed partly on rock and partly in water, of the breadth of 86 feet, compared, by this Engineer, with one of 30 feet, and the canal in this space charged with all the attendant expenses of outside walling, to guard against abrasion from the river, puddling within its banks in order to retain the water admitted into it, and as the ingenious and liberal calculator provides, \$ 5,000 a mile also, for paving within, although one of its sides must be of rock.

Had the writer inquired for the estimates of the part of this canal along the "intermediate grounds," he would have found that the working estimate, prepared to regulate the acceptance or rejection of proposals for its construction, does not extend the cost of the twelve miles, after including not only its lockage, but the expense of a substantial dam across the river, immediately below Harper's Ferry, beyond \$250,000; a sum less than that which he admits the Rail Road will cost within the same distance. For, putting down the cost of the road provided for, on his own estimate, at \$39,794 a mile, and its length, at his measurement of 11,134 feet, its tracks, as he proposes, to be 3 in number, and laid on stone sills, as he suggests, though on the principle of perfection, which he applies to canals, he ought to provide at least a fourth track, for the cars to pass each other with various velocities, which would add to this estimate at least \$13,233 more, for this track and the further cost of graduation, and there results, in order to reach Harper's Ferry, for the 3 tracks at \$6,500 each, on a line of 9 miles and 4,706 feet, *for the rails alone*, \$192,880, which, added to the ~~computed~~ cost of the 11,134 feet computed by himself at \$39,794 a mile, furnishes an aggregate of \$276,794, without any allowance whatever for graduating the foundation of the rails, for a distance of 9 miles and 4,706 feet, or for a single perch of masonry, for culverts, viaducts, or side drains of any description; an aggregate exceeding the working estimate for the canal along the same line, by the sum of \$26,794, and if but a moderate allowance be made for the graduation, including the masonry of the Rail Road, by a sum, not much short of one hundred thousand dollars.

It has been acknowledged that these items, exclusive of the rail tracks on the first 7 miles of this road, leading out of Baltimore, cost \$438,775 85, exclusive of all contingencies, being \$62,654 80 per mile, and allowing for three tracks with stone sills, making up a sum exceeding \$80,000 a mile, exclusive of contingencies. These, even on this part of this road, cannot appear inconsiderable when reference is had to the report of the President and Directors, from which the above facts are obtained; wherein "sixty-one thousand "one hundred and seventy-seven dollars twenty-five cents are charged to expenses incurred in surveys and locations, including the "pay of Engineers, and their assistants; six thousand eight hundred and sixty-five dollars thirty-two cents for law expenses, fees "of counsel, and chancery expenses; and sixty-six thousand nine "hundred and eighty-eight dollars sixty-two cents for cost of machinery, for the purpose of construction of the rail-road, of transportation and weighing, including the purchase of patent rights, "and moving power, contingencies, expenses of widening the cuts, "and embankments, and *perfecting the graduation* at the time of laying the rails; releases of the right of way, discounts, expenses of "opening the books," &c. How much of the \$66,988 62 should be charged to the first seven miles of the road is not stated; though a part of it would seem to belong to the graduation, or the "*perfecting*

of the graduation, prior to laying the rails ;" it being the part of this road whereon the rails were first laid. Nothing is added, for the improvements, subsequent to opening the road.

It would, it is obvious, be unfair to charge the proposed rail-way, between Harper's Ferry and the Point of Rocks, with the maximum cost of the graduation, on the most expensive part of the route of this road, but it would be equally correct, with the course actually pursued by the chief Engineer of this Company, in ascertaining the relative cost of canals and rail-roads, by referring to the construction of short pieces of canals, and rail-ways, under or upon precipices of granite, and in the bottoms or along the rocky margin of rapid rivers.

Much more incorrect, however, is the sweeping general assertion of this Engineer, that, "on the most favorable ground," for a canal, "its cost will exceed by 50 or 25 per cent. (the calculator scorns fractions;) that of a rail-way," (of course, such as he has been describing,) of three tracks, or at least of two tracks.

Several miles of the Chesapeake and Ohio Canal have been constructed, along the bottoms of the Potomac, for less than the cost of a single rail-way track; one half mile, on level ground, at little more than \$1,500, and the possibility of this, is so obvious, to any Engineer, who will take the trouble to make a calculation of the necessary depth of cutting, to supply the banks of a canal, where you can chuse its level, that the assertion of this writer, in face of his own facts, is not a little remarkable.

It is not, however, more so, than what the same Engineer attempts to prove in relation to "other routes of canals and rail-roads," than those of a few thousand feet under the precipices of the Potomac, to which, he first gives his candid attention.

The liberality of his course of inquiry towards the Chesapeake and Ohio Canal is, here, again, manifested in his statement, "that, so far as the structure of this canal, has been prosecuted, it has been understood," he does not say-by whom, "that the estimate of its cost, at \$5,000,000, between Georgetown and Cumberland, has been found to be wholly inadequate; and *he is of opinion*, that unless the dimensions of the canal be contracted, or the work be made less permanent in character, the estimate, first mentioned, that of \$8,000,000, will be not far from the amount which that work will have actually cost, should it ever be completed to Cumberland."

It is now well known, that no survey, of any description, for a rail-way, up the left bank of the Potomac had been attempted, before the purchase, by the Baltimore and Ohio Rail-Road Company, with a celerity unexampled, of the ground along the difficult passes, on the left bank of that river, where they admit, themselves, that no choice of way existed; and while it is believed that no working survey has even since been completed of the entire route of a rail-way from the Point of Rocks to Cumberland, it is not a little astonishing, that the Chief Engineer of this Company, who has so little re-

liance on the calculations of experience, entertains the *confident* belief, that the Rail-way from Baltimore to Cumberland, will not exceed, in cost, \$ 5,000,000 !

He also believes, it appears, that the expense of constructing a canal from Baltimore to the "Point of Rocks, would be *double*, what the rail-road, *between the same points*, will cost: while the reason that he gives for this belief, is, that the estimate reported by Dr. Howard, "for a canal from Georgetown to Baltimore, the length being 44½ miles, amounted to \$ 2,800,000." Now, this author¹⁸⁴⁸ of the comparative estimate of the cost of rail-roads and canals, might have, as well, assumed any other estimated route for a canal as this, for his standard of comparison, since the Baltimore and Ohio Rail-Road, in passing to the Point of Rocks, occupies but a very small part, if any, of that space which Dr. Howard surveyed for a canal from Baltimore to Georgetown; and this Engineer very well knew, at the same time, that the estimate of the cost of this canal, was founded on the same erroneous data, which led Dr. Howard, in conjunction with the United States' Engineers, to compute a canal with a cross section of 202.5 feet, only, at a price greatly exceeding the actual cost of one of 306 feet along the valley of the Potomac, and over very nearly the same ground. Let the estimate for the Baltimore canal be reduced by a reference to the actual cost of the Chesapeake and Ohio Canal, and the estimated cost of that, by recurring, from its actual, to its former estimated dimensions, and a canal from Georgetown to Baltimore, 48 feet wide and 5 deep, would appear capable of construction, by this fair standard, at less than the present estimate of the sixty-seven miles of rail-road from Baltimore to the Point of Rocks, or of a substantial rail-road from Baltimore to Georgetown.

It is not a little surprising, that in reply to the grave call of a Legislature, this Engineer did not recur to the ascertained cost of the archetype and model of all modern rail-roads, that between Manchester and Liverpool, for one term of his comparative estimate of the cost of rail-roads and canals. In looking to his other term, it is equally strange that he should have passed, unheedingly, by the numerous canals of the United States. Those, for example, of New York, of Pennsylvania, and of Ohio.

By an early report of her Canal Commissioners, the canals of New York were stated to have cost about seventeen thousand dollars a mile. By the last report of the Canal Commissioners of Ohio, 190 miles of canal in that State, extending from Lake Erie to the north end of the Licking Summit, and now regarded as finished, have been constructed, with all their costly appurtenances, at a price which, embracing every contingent expense, is less than \$11,000 a mile; or, by \$2,000 short of the cost of the mere rails of a double track, on stone sills, of the Baltimore and Ohio rail-road, according to the same Engineer.

This comparison omits any allowance for graduation, and contingencies of every description. Yet this practical civil Engineer pre-

150
 sumes to tell the Legislature of Maryland, that "in the most favorable ground along the river bottom lands" of the Potomac, it is presumed, "the expense of the canal, would exceed that of the rail-road from 25 to 50 per cent." If the Chief Engineer of the Baltimore and Ohio rail-road could have awaited the late annual report of the Liverpool and Manchester Rail-road Company, he would have seen that a rail-way of only two tracks, overcoming in $32\frac{1}{2}$ miles an elevation of less than 50 feet, had cost, including all contingencies, £365,000 sterling, a sum exceeding \$120,000 per mile: while he must have known, that the magnificent canal of Languedoc, in length 148 miles, with a mean breadth of 49 feet, and overcoming a summit of more than 600 feet, with a lockage of 1200—though constructed with the revenues of the French monarchy, cost much less per mile, than the half of that sum. He would also have perceived that the present charge for transporting a bale of cotton, on the Liverpool and Manchester rail-road, is 10s. sterling a ton for a distance of $32\frac{1}{2}$ miles, and 5s. sterling for each passenger. Rates which, for commodities, are treble the cost of transportation, for like distances, on the canals of Pennsylvania and New York; and for passengers, more than double the cost of transportation for the greater distance of 56 miles, on the canal between Glasgow and Liverpool.

As to the cost of repairs on canals and rail-ways, which must regulate their nett profits, experience, until matured by time, can furnish no measure of their relative extent. Much must depend upon the excellence of their construction. A celebrated constructor of steam engines and carriages, who has recently returned to America, from England, apprises the public, that there is no rail-road in America, of sufficient strength to bear the free use of locomotive engines; and whether the rail-road of Liverpool and Manchester will sustain their use, with profit to the company, by which that costly work has been constructed, remains to be verified by the fulfilment of promises not yet realized, and against the suggestions of nine months' experience, on a perfectly new and very smooth road.

Lest the estimate of this Board, that the canal between Georgetown and Cumberland will cost 5,000,000 dollars, should appear to be impaired, by passing unnoticed another error of the same Engineer, to whose calculations reference has been so often made, it is proper to remark, that if the experiments on the Ardrossan, and other canals of Scotland, have not destroyed all apprehension of injury to the bank of a canal by boats moving on their surface with great velocity, the remedy hitherto applied to prevent such injury, is much less expensive than this Engineer supposes, who charges 5,000 dollars a mile for walls calculated to protect the inner slopes of a canal from washing. More than 40,000 superficial yards, one foot in thickness, of such walls, have already been constructed in the Chesapeake and Ohio Canal, at the cost of less than sixteen cents a yard, including the price of transporting the stone, some distance, by land. The residue of this work, for which the canal excavation furnishes an abundant supply of materials, has been permitted to await the introduc-

tion of water into the canal, that the stone may be transported by boats tracked by horses. Allowing twelve cents a cubic yard for the transportation, but reducing the height of the wall as has been found expedient, the cost of such an inner lining for four feet, on each side of the canal immediately below the surface of the water, which is all that is necessary for its object, would be reduced, from a thousand, to about 587 dollars per mile.

For several miles together, the Chesapeake and Ohio Canal has a border of solid rock on one side, which needs no lining for its protection. In other places it is spread out to such breadth, by a single embankment on the side next the river, that it needs no such lining along either slope. When compressed, as it is, for less than a single mile on a line of 48, within a breadth under 60 feet, it is always bounded by rock, which yields stone for its inner pavement, free of the cost of transportation, so as to save a part of the above estimated cost.

It is somewhat remarkable that the Chief Engineer of the Railroad Company should add 5,000 dollars a mile to the cost of the canal at the Point of Rocks for its inner lining of stone, when he takes care to lodge it, as well as the rail-road, on a bed of rocks, and provides, in an estimate, of the joint cost of the two works for a wall of three feet between them.

The residue of his comparison of rail-roads with canals, is equally impartial with the preceding, and obviously designed to withdraw the patronage of the State of Maryland, from her canal, for it is hers unless she chooses to expel it from her territory, to the Baltimore and Ohio Rail-road. The far greater part of his facts are inconsistent with each other; his assertions are without proof; and his principles have been refuted by experience, as we have seen.

What shall be thought of the judgment which, under the climate of Maryland, and in relation to the Potomac, pronounces that "from the combined effects of floods, breaches, repairs, drought, and cold, the average duration of the navigation of a canal, in our climate, is reduced to about one half of the year?"

The Chesapeake and Ohio Canal was easily kept open for navigation, and actually navigated with facility, when frozen to the depth of very near three inches. In the late hard winter, its use was not suspended by ice till after the middle of January.

Does any man believe that the Potomac river will not supply an adequate quantity of water, in any drought, to feed a canal along its banks; or that internal intercourse will be promoted, and "transfers and transshipments, adding to the expense and risk of transportation, be prevented," as this writer insinuates, by substituting a rail-road for a canal, along the margin of a river which has already upon its stem and its branches above tide-water, a descending navigation, perfect, at some seasons, of 750 miles; or that a country will resort to rail-roads, instead of canals, which has a coast, thus bordering navigable water, for 1,500 miles, counting both shores of this river, and of its often navigable tributaries?

How well does it fit the occasion of his letter, to comprehend among

the advantages of rail-roads, over canals, that the latter occupy the *best lands* of a country, when the very rail-road, which this Engineer is endeavoring to exalt in value above the Chesapeake and Ohio Canal, is seeking to establish a right to pre-occupy the very ground along the Potomac, so often surveyed for the construction of the canal? Let rail-roads, which are admirable time and labor-saving inventions, be constructed wherever the trade which they are designed to accommodate will defray the cost of their construction and use, and they can either be rendered more beneficial than canals, or canals cannot be made. The friends of the Chesapeake and Ohio Canal never sought to obstruct the progress of the Baltimore and Ohio Rail-road, till the friends of the latter aimed a mortal blow at the former. The former sought not to impede, or even delay, as they might readily have done, the grant of the charter of the Rail-road Company; not only was the grant perfected without resistance, but the best feelings united the friends of both enterprises, until the route originally contemplated or announced, for the rail-road, was changed, and the attempt to seize the ground surveyed for the canal boldly made and justified, on the ground of prior right.

The allegations against the officers of this Company, so often repeated, in the late report of the Baltimore and Ohio Rail-road Company to the Legislature of Maryland being groundless in every respect, recoil upon their authors, and neither merit nor will receive a reply from this Board.

By yielding obedience to the late orders of the Chancellor of Maryland fixing on the 15th of this month for the trial of the case depending between the two Companies, the causes of mutual recrimination between them will be removed; the true interests of both, as well as of the public, be promoted; and an opportunity afforded to the friends of each, of estimating, by a standard more correct than that of interest, the relative propriety of their conduct.

In this object, this Board will cordially unite with the President and Directors of the Baltimore and Ohio Rail Road Company.

The President and Directors return from this unpleasant topic to other interests of the Company, which require notice in this Report.

With a view to the preservation of the canal from washes from the hills, above Georgetown, across the road, which now constitutes its berm for a considerable distance; and, to guard more effectually from danger the traveller upon it, and his property, the President and Directors, having regard to the joint interest of the Stockholders, and the public, and in anticipation of the wishes of the Company, sought of Congress permission to convert into a turnpike, in order to defray the expense of paving and keeping in repair, so much of that road as extends along the canal, from Georgetown, to a point opposite the chain bridge across the Potomac. A bill to that effect readily received the sanction of the House of Representatives, but was lost in the Senate, through the delay occasioned by efforts, from without, to amend some of its provisions. It reserved to the Company the right to accept it, or not; and, as it did not pass, it may be

expedient for the Stockholders, at the present general meeting, to determine upon the expediency of renewing the application for its passage, to the next Congress.

It may not be unworthy the attention of the Stockholders to avail themselves of the same occasion, to enable the public, without injury to the canal, to use the tow-path, at the discretion of the Company, for travelling by other horses than those engaged in tracking the canal boats. A better road cannot well be conceived, than a tow-path as broad as this furnishes; and a moderate toll, not exceeding that of an ordinary turnpike, would render this indulgence to the public expedient, by defraying its necessary cost to the Company.

In the progress of the use of the canal, a defect in the Charter of the Company has been disclosed, which totally escaped the notice of its framers; it contains no express provision for such by-laws, rules, and regulations for the preservation of the works on the canal, and the police of its navigation, as all similar corporations are authorized to pass, in subordination to the Constitution and laws of the United States, and of the several States in which they exist, and are required to act.

There are numerous details relative to the registration of the boats, the mode of propelling them, and the use of the tow-path and locks of the canal, that the general laws of a country could scarcely be expected to reach, but which will be eminently conducive to the security of the works of the canal, and to the peace and comfort of those who navigate it. A power to provide them, if not inferable from the general conservative power of the Company, ought somewhere to be lodged, so that its aid may be always within the reach of the Company, and promptly exerted, under adequate sanctions. The experience of many of the States, and the charters, especially, and by-laws of the canal companies to the North, afford models for the form, extent, and operation of this power, the expediency of asking for which, is here respectfully suggested to the general meeting.

It is presumed that all the other objects hitherto sought to be obtained by memorials addressed to the several parties to the charter of the Company under the authority of former resolutions of the Stockholders, are still within the scope of the authority, conveyed by these resolutions, which, having been once approved, need not, on the present occasion, be renewed.

In furtherance of one of the objects sought by these resolutions, a memorial, in behalf of the Alexandria Canal Company, was revived at the last session of Congress, and a favorable report obtained, from the Committee on Internal Improvements, to the House of Representatives, which was not, however, definitively acted upon.

Pursuant to a former resolution of the Stockholders, a call has been made, by the President and Directors of that Company, on this, for the construction of the northern abutment of the aqueduct, across the Potomac, by which they propose to connect their branches with the main stem of the canal. The execution of this call has awaited the precise location of the site of the abutment, and the undisputed acquisition of the ground on which it may be erected.

A similar intimation has been received from the Corporation of Washington, that they are preparing for the extension of the navigation of the canal, from the basin of Rock Creek to the Tiber. This Board has announced its readiness to proceed, in good faith, to the construction of this work, when the plan, by which it is to be accomplished, shall be definitively settled in the judgment and to the satisfaction of the city Corporation.

These two works will complete the labors of the Company within the District of Columbia, and leave the attention of the Board and its officers to be directed, exclusively, to the works above the Seneca dam and feeder, to which the canal is at present, and has been, for some time, navigable. As the several works placed under contract have advanced towards their completion, the Board have reduced the number of Engineers in the service of the Company.

The first division of the canal, between Washington and Harper's Ferry, originally placed under the direction of an Engineer in Chief, and distributed into five residencies, having each a resident Engineer, an Assistant, a Rodman, and a volunteer Rodman, has been, for some time reduced to two residencies; and the services of Benjamin S. Wright, Engineer in Chief, and of Nathan S. Roberts, Engineer of the 2d division of the canal, and retained as a Commissioner of the Court of Chancery of Maryland, have been for some time dispensed with, as no longer necessary.

This reduction, though required by a just regard to economy, has been attended with no small regret, on the part of the Board, at the retirement of those eminent and valuable Engineers, aggravated by the mortifying consideration, that the loss of their services is to be ascribed to the legal impediments which continue to obstruct the progress of the canal above the Kitoctan mountain.

A still further reduction of this body must ensue a failure to obtain a decision of the depending controversy, during the ensuing Summer.

To the removal of this obstruction, all the wishes of the Board have been for some time directed, with an energy increased by the failure of the compromise which once promised to open to them an avenue above, at least as far as Harper's Ferry.

The repairs of the canal have been placed, together with its improvements, under the care of a special superintendent, who is held responsible for both.

The latter consists of alterations of the structure of the canal, or of such additions to the various works as were originally embraced in the plan of the canal, but could be executed with greater economy, after the opening of its navigation.

They consist of buttresses to support the lofty external walls; of stone transported from the surplus of former excavations, and loosely thrown over these walls to strengthen their foundation; of earth to raise embankments which have settled since the admission of the water; and of inner walls to guard the banks from abrasion by the surge of the canal boats.

The duties of this officer are regarded as permanent, but his compensation will be reduced as their importance lessens.

It will not be proper to close their report without adverting more particularly to the revenue of the Company.

The Board have not augmented, as yet, the tolls allowed by the Charter of the Potomac Company, notwithstanding the heavy sum already expended on the new canal: they charge no toll on empty boats, and have hitherto derived no revenue from the transportation of persons on the canal.

The annexed table, however, presents a favorable view of the receipts of tolls, for the last, compared with those of preceding years; and especially since the opening of the new canal, by which the dangerous shoals immediately below the Seneca dam, and between the Great and Little Falls, are avoided. Another table supplied by the Clerk from materials in his office, will show the various subjects on which these tolls have been charged, and the expense attending their collection.

The tolls which accrued between the 15th of August, 1828, and the 1st of June, 1829, amounted to \$12,177 64: from June 1st, 1829, to June 1st, 1830, during which period the use of the canal of the Little Falls was long suspended, to \$10,719 66—being about the average of many preceding years: while, from the 1st of June, 1830, to the end of the last fiscal year, they have amounted to \$29,151 35; of which \$20,378 01 have been received since the 1st of January last, and of this the sum of \$17,463 46 from the new canal, since the 21st of March.

The commodities which have descended the canal, as might be expected, prior to its extension beyond the first mountain which impedes by the shoals at its base, the river navigation, have been few in number. They consist chiefly of iron, flour, bacon, lard, butter, and whiskey.

No *lumber*, nor any cord wood, as yet, appears in the returns of the collector. A single proprietor, however, is preparing, above the Great Falls, 10,000 cords of wood for delivery at his manufactory in Georgetown, and the *former*, which lately met the lumber of the North, above those Falls, will shortly mingle with it, in the markets of the District of Columbia.

The Board look, however, to the extension of the canal to the coal banks, or the discovery of that mineral on its margin, nearer to tide water, for the fulfilment of those hopes of future indemnity and profit to the stockholders, which they cherish and seek to diffuse with a confidence unabated.

The gross amount of tolls is chargeable with the salaries of the lock-keepers and collectors, and with the necessary repairs of the canal in use. All improvements are properly chargeable to the construction of the canal, and are, in fact, a part of its capital stock.

The nett revenue for the fiscal year just expired, is not stated in the subjoined table, in consequence of the accounts of the collectors not having been definitely closed, and a part of the tolls which accrued within the year being yet uncollected; but its amount, for all practicable purposes, may be ascertained, before the adjournment of the general meeting.

In relation to the application to be given to this revenue, some difficulty has arisen from the still unsettled pretensions of certain claimants on the late Potomac Company, who have declined accepting the provision offered for their settlement, by the charter, in a subscription to the stock of the company.

A late adjudication of one of these claims, by the Circuit Court of the District of Columbia, for the county of Washington, has been pronounced in favor of this company, but an appeal has been taken to the Supreme Court of the United States, where it will be the interest of the company to obtain, as early as possible, such an exposition of the true extent of their responsibilities to the creditors of the late Potomac Company, as will produce a general acquiescence and contentment.

Signed on behalf of the President and Directors :

C. F. MERCER,

President of the Chesapeake and Ohio Canal Company.

JUNE 5, 1831.

NOTE A.

The United States' Board of Internal Improvement, in the report, to which allusion is here made, do not, in fact, prefer the dimensions quoted in the text of this report; but, assuming the breadth of their locks to be 14 feet, and $13\frac{1}{2}$ feet to be that of the boat which should pass through them, they say that "the water line" of the canal "should be $60\frac{3}{4}$ feet—that is, four times and a half the breadth of the boat." And in a subsequent passage of the same report, they say: "The foregoing considerations show, that, in determining the transverse section of a canal of great length, and with a dividing summit level, the amount of lockage must have a due influence upon the breadth and depth of the water section. And, indeed, taking into view the great distance and considerable lockage belonging to the present case, a cross section, *larger than that recommended*, might have been suggested, had not a regard to economy, and to a competent supply of water, during the dry season, forbidden it."

Between Harper's Ferry and Georgetown, to which, by the order of the Board, communicated to the Stockholders, in the first annual report, the extension of the canal to a breadth of 60, and depth of 6 feet, was limited, there could be no doubt of a sufficient supply of water, and it remained, "in the judgment of the Board, a question to be determined hereafter," as the report stated, "whether the enlargement of the dimensions of the canal, beyond fifty feet, shall be extended above the mouth of the Shenandoah." As far at least as that point, a prudent regard to the competition "which the canal has to encounter, not only for the trade of the West, but of its own tributaries, the Valleys of the Potomac, and of its navigable branches, required that the Board should avail themselves of all the aid which science could supply, to fix this commerce in its natural channel. The acquisition of at least 60 per cent. to the facility of transportation upon the broader and deeper channel provided for the Chesapeake and Ohio Canal, is believed to be worth more than an advance of 20 per cent. on the cost of its construction."

The enlargement of the canal, below the last feeder, to a cross section of from 416.5, to 426 feet, was designed to supply, for several canals, at, or below, Georgetown, and for manufacturing purposes, a sufficient quantity of water, without accelerating the downward current of the canal, or reducing its depth to the injury of its navigation.

Vide pp. 12, 13, and 14 of the first Annual Report.

APPENDIX.

ABSTRACT of Receipts and Expenditures on account of the Chesapeake and Ohio Canal Company, to the 31st day of May, 1831.

May 31, 1831.	
To capital stock for amount of instalments paid to date, agreeably to returns received	\$ 1,668,750 40
To unclaimed dividends of the Potomac Company, received from the late Treasurer, for amount due sundry stockholders	366 30
To Tolls account, amount received to date	41,073 78
To Potomac Company, received from the late Treasurer	131 87
To do. received from Jno. Strider, for balance due by him	237 30
To do. rec'd from Jacob Payne, on account	36 18
To do. received for old iron sold	13 17
	418 52
To acquisition of lands, received from Thos. C. Wright, for old houses condemned and sold	357 60
To do. received from C. F. Mercer, Esq. for an unexpended balance, (31st May, 1830)	672 31
	1,029 91
To profit and loss received for interest and gain on State of Maryland stock sold	3,375 95
To interest account, received on judgments against delinquent stockholders	11 02
To law expenses, received for costs of suit against delinquent stockholders	17 38
To do. received from C. F. Mercer, Esq. for an unexpended balance, (31st May, 1831)	80 00
	97 38
To construction of the canal, received for materials sold the Penitentiary	82 20
To Corporation of Georgetown, received on loan, 4th inst.	25,000 00
	<u>\$ 1,740,205 46</u>
May 31, 1831.	
By contingent expenses Chesapeake and Ohio Canal Company	\$ 5,494 35
By requisitions paid and charged to—	
Pay of officers	17,982 29
Construction of the canal	1,539,521 33
Engineer department	71,273 63
Western section	4,026 08
Stationary	1,033 38
Printing	3,770 46
Postage	249 40
Acquisition of lands	78,584 62
Law expenses	5,089 45
Potomac Company's account	2,749 81
Do. unclaimed dividends	5 55
Interest account	166 95
	<u>1,724,452 95</u>
By balances to the credit of the Chesapeake and Ohio Canal Company in—	
Office Bank United States, Washington	3,972 47
Bank of Washington	1,858 16
Bank of the Metropolis	90 18
Patriotic Bank	1,009 00
Bank of Alexandria	85 21
Bank of Potomac	2,114 73
Farmers and Mechanics' Bank, account contingent	1,005 65
Office Bank Valley, Charlestown	5 48
Do. Leesburg	149 50
Hagerstown Bank	97 97
	<u>\$ 10,388 35</u>
Deduct Farmers and Mechanics' Bank, overdrawn	130 19
	<u>10,258 16</u>

By balances to the credit of the Chesapeake and Ohio Canal Company in—

TREASURER'S OFFICE CHES. AND OHIO CANAL CO. \$ 1,740,205 46

Georgetown, 3d of June, 1831.

C. SMITH, Treasurer.

*ACCOUNT of Tolls which have accrued from the 15th August, 1828,
to 1st June, 1831.*

At the Great Falls—

From 15th August, 1828, to 1st June, 1829,	-	\$ 12,177 94
*From 1st June, 1829, to 1st June, 1830,	-	10,719 66
†From 1st June, 1830, to 1st January, 1831,	-	6,786 37
†From 1st January to 1st June, 1831,	-	2,714 55
		<hr/>
		\$ 32,398 52

At Seneca Guard Lock (New Canal)—

From Nov. 1830, to 1st Jan. 1831,	\$ 2,186 97
From 21st March, 1831, when the new canal was re-opened, to 1st June, 1831,	17,463 46
	<hr/>
	19,650 43
	<hr/>
	\$ 52,048 95

Total amount of Tolls—

From 15th August, 1828, to 1st June, 1829,	\$ 12,177 94
From 1st June, 1829, to 1st June, 1831,	10,719 66
From 1st June, 1830, to 1st June, 1831,	29,151 35
	<hr/>
	52,048 95

*EXPENSE of Maintaining the Canal and Works, from 15th August,
1828, to 1st June, 1831, including Pay of Collectors and Lock-keepers.*

For repairs of gates, opening the channels, &c. of the old works, at Great Falls,	-	\$1,536 17
Little Falls,	-	692 28
		<hr/>
		\$ 2,228 45
For pay of Collector of Tolls and Keeper of Locks at Great Falls, to 1st January, 1831, at \$ 600 per annum,	-	1,425 00
For his three Assistants,	-	1,122 86
At Little Falls, for pay of Lock-keeper to 1st June, 1831,	-	731 25
		<hr/>
		3,279 11
Incidental expenses—printing way-bills,	-	20 00
		<hr/>
		5,527 56

* The navigation of the canal having been suspended, by the construction of the new works, from July, 1829, to March, 1830 : the tolls then accruing on the other portions of the old works were withheld by the boatmen, who claim to be discharged from the payment of those tolls. They are, however, included in the amount above stated.

† The new canal was opened for use in November, 1830.

For pay of Keepers of Locks on new canal,			
to 1st April, 1831,	-	-	1,133 78
Due for same account, to 1st June—say	-		400 00
		<hr/>	1,533 78
			<hr/>
			\$ 7,061 34
			<hr/>
			<hr/>

There has also been paid for repairs on the *new canal*, to 1st June,
\$ 8,077 51.

JOHN P. INGLE,
Clerk Chesapeake and Ohio Canal Company.

TRADE of the Potomac River above tide water, from 15th August, 1828, to 1st June, 1831.

DESCENDING CARGOES.	From August 15, 1828, to June 1, 1829.		From 1st June, 1830, to 1st June, 1831.		From 1st January, 1831, to 1st June, 1831.		Total from 1st June, 1830, to 1st June, 1831.		
	Gr't Falls	Gr't Falls	Gr't Falls	Seneca Gr'd Lock	Gr't Falls	Seneca Gr'd Lock	Gr't Falls	Seneca Gr'd Lock	Both places.
Tobacco	49	37	17	-	-	8	17	8	25
Flour	64,560 $\frac{1}{2}$	65,469 $\frac{1}{2}$	40,684	11,859	15,095	103,920	55,779	115,779	171,558
Whiskey	3,907	2,486	469	436	21	1,022	490	1,458	1,948
Apples	13	8	-	-	-	-	-	-	-
Wheat	8,331	8,562	2,155	-	65	9,361	2,220	9,361	11,581
Bran and shorts, &c.	3,942	3,080	1,120	148	-	2,700	1,120	2,848	3,968
Rye and chop	733	554	26	-	-	-	26	-	26
Corn	1,032	-	75	-	-	331	75	331	75
Corn meal	109	-	-	-	-	-	-	-	-
Flax and other seeds	6	51	20	-	22	-	42	-	42
Coal	2,020	280	-	-	-	-	-	-	-
Potatoes	-	710	-	-	-	-	-	-	-
Beans	-	-	-	-	84	-	84	-	84
Stone	130	-	-	-	-	-	-	-	-
Iron, pig, bar, & castings, do.	459	211 $\frac{1}{2}$	-	5 $\frac{1}{2}$	-	179	-	184 $\frac{1}{2}$	185
Bacon	44,650	96,700	968	-	63,400	84,710	64,568	84,710	149,078
Lard and butter	11,400	3,700	-	921	7,500	-	7,500	921	8,421
Hemp and flax	2,850	7,450	9,000	-	-	4,000	9,000	4,000	13,000
Leather	2,500	1,500	2,300	-	-	-	2,300	-	2,300
Hogs	-	800	5,100	140	-	-	5,100	140	5,240
Muskets	-	228	-	-	-	-	-	-	-
ASCENDING CARGOES,									
Consisting generally of plaster, fish, and salt. Amount of Tolls	\$58 65	\$52 77	-	-	-	\$313 50	-	\$313 50	\$313 50

NOTE.—Returns have not yet been received, shewing the particular articles constituting the ascending cargoes. The amount of tolls received is therefore given. The produce entered under the head of "Great Falls," is that which passed through the old works of the late Potomac Company; and that under the head of "Seneca Guard Lock," entered the new canal at that lock, and did not pass through the old works at the Great Falls.

OFFICE OF THE CHESAPEAKE AND OHIO CANAL COMPANY,

Washington, June 6, 1831.

JOHN P. INGLE, Clerk Ches. & Ohio Canal Co.

OFFICE OF THE CHESAPEAKE AND OHIO CANAL COMPANY,

Washington, November 6, 1830.

By order of the President and Directors of the Chesapeake and Ohio Canal Company of this date, letters were addressed to Nathan S. Roberts, Esq. Engineer of Division, and Alfred Cruger, Esq. resident Engineer, requesting information as to the time and expense necessary to complete the surveys, locations, drawings, &c. of the line of the canal and rail-road between the "Point of Rocks" and Cumberland, according to the order of the Chancellor of Maryland, and after the same manner as that begun by Messrs. Knight and Roberts under that order; also, as to the increased cost, to both companies, of a conjoint construction of the two works, between the before-mentioned points; and, also, such information as would demonstrate the various disadvantages to which the canal would be exposed by a conjoint construction with a rail-road.

The following answers have been received:

ENGINEERS' OFFICE, *Georgetown, 2d Dec. 1830.*

JOHN P. INGLE, Esq.

Clerk of the Board of Directors of the Ches. & Ohio Canal Company.

SIR: Your letter is received, containing a request from the Board of President and Directors, to inform them what length of time will be necessary to complete the surveys, locations, drawings, &c. of the line of the canal and rail-road between the Point of Rocks and Cumberland, according to the order of the Chancellor of Maryland, and after the same manner as that begun by myself and Mr. Knight under that order; and what would be the expense thereof to this company; and, also, what would be the additional expense to both companies of constructing the canal and rail-road on such conjoint location? In answer to the above request, I take the liberty to present the following statements:

That the distance from the Point of Rocks to Harper's Ferry, as reported upon by Mr. Knight and myself, under the order of the Chancellor of Maryland, is 12 miles, (and a fraction over,) and the parts in collision amount to 11,153 feet, or 2 1-10 miles, equal to about one-sixth of the whole distance.

The time spent by the party was from the 17th of March to the 4th of July, in making the above locations, calculations, and drawings, or about 3½ months; although I am of opinion, that, with the same party, the same amount of work might be done in a month less time, as considerable time was taken up in making reconnoissances and plans of procedure, and, also, in making up the party of Mr. Knight, who was accidentally destitute of a principal assistant for about two weeks, at the commencement, owing to a circumstance, over which, as I have reason believe, he had no agency or control.

The distance from Harper's Ferry to Cumberland, as taken from the report of Judge Geddes and myself, is stated at 127 miles, and the amount of all the narrow passes, where the canal and rail-road will probly come in collision, is about 45 miles, equal to one-third part of the whole distance, (and a fraction over.) And, as this amount of narrows is double the proportion to that which has already been reported upon, (below Harper's Ferry,) it would, therefore, require double the time per mile to make the locations, calculations, drawings, &c.

The time employed on 12 miles below Harper's Ferry, as above stated, was 3½ months, or about one month to three and a half miles. And above Harper's Ferry, by the same progress in operations, an equal distance would require double the time; that is, a distance of three and a half miles would require two months, and, at that rate, the whole distance of 127 miles would require $127 \cdot 3 \cdot 5 \times 2 = 72$ months, (and a fraction,) or six years, supposing the labor to be done by one company.

The cost incurred by this company in making the locations, the calculations, levelings, and drawings of cross sections; for every distance of 100 feet or shorter portion as was judged necessary, in accordance with our instructions, wherever the canal and rail-road were in collision along the narrows, and in locating the intermediate parts of the canal with the appropriate drawings, which was also deemed necessary to be done, in order to continue the levels, although independent of the rail-road, is estimated at a sum not less than \$2,600, or \$220 per mile; and if the locations, calculations, and drawings, of cross sections are to be taken, on all parts in collision, with the same care as above stated, and including the locations of those parts of the canal that are independent, as was judged necessary, in compliance with the Chancellor's order, the cost would amount to \$440 per mile, or \$55,880 for the expense of the whole location from Harper's Ferry to Cumberland.

The extra cost of conjoint construction to both companies on the 12 miles reported upon, below Harper's Ferry, is estimated at \$1,000 per mile (omitting fractions) and by observing the proportions above stated, the extra expense above Harper's Ferry will be \$2,000 per mile, and for the whole distance would be \$254,000 for both companies; and provided an equal division is made, the extra cost of a conjoint and simultaneous construction of the canal and rail-road from Harper's Ferry to Cumberland would be \$127,000 to each company.

Condensed Summary.

The time spent on 12 miles, between the Point of Rocks and Harper's Ferry, was	-	-	-	-	-	3½ months,
The time required on 127 miles, between Harper's Ferry and Cumberland, is	-	-	-	-	-	72 months,
The total estimate of time required, is	-	-	-	-	-	75½ months.

Extra expense to the Chesapeake and Ohio Canal Company, viz :

Expense of locations on 12 miles below Harper's Ferry	-	-	\$ 2,600
Do. do 127 miles above Harper's Ferry	-	-	55,800

Total amount of estimates for locations, &c.	-	-	\$ 58,480
One half of the extra expense on 12 miles below Harper's Ferry	-	-	6,000
One half of the extra expense on 127 miles above Harper's Ferry	-	-	127,000

Making the estimated extra expense to be incurred by the Chesapeake and Ohio Canal Company, on account of its collisions with the Baltimore and Ohio Rail Road, by conjoint locations and conjoint construction from the Point of Rocks to Cumberland, in case of compliance with the order of the Chancellor, amount to - \$ 191,480

I would observe, that the expense of locating the 12 miles below Harper's Ferry, as above stated, is rather larger than that reported to the Chancellor; and that it is very difficult to state the time occupied, or the exact cost of making that survey, &c. from the Point of Rocks to Harper's Ferry, as much time was spent previous to, and has been since the date of said report, relating to those locations which has not been brought into the above amount; leaving the same still considerably less on that amount than the actual cost to this company.

All which is very respectfully submitted.

NATHAN S. ROBERTS, *Civil Engineer,*
In the service of the Ches. and Ohio Canal Company.

LINE OF THE CHESAPEAKE AND OHIO CANAL,
January 22d, 1831.

CHARLES F. MERCER, Esq.

President of the Chesapeake and Ohio Canal Company.

SIR: The following several interrogatories, transmitted to me by the Clerk in conformity with an order from the Board of Directors, relating to the effects to be produced upon the Chesapeake and Ohio Canal by the construction of a rail-road in union with it, in the valley of the Potomac, from the Point of Rocks to Cumberland, as follows: 1st. The time necessary to complete the surveys, locations, and drawings? 2d. The expense attending such surveys, &c.? 3d. The increased cost of constructing the canal in conjunction with said rail-road over and above the cost of an independent canal? 4th. The disadvantages to the canal arising out of this conjoint construction, in reference to its use and future repairs, and such other information as may illustrate the difficulty of constructing conjointly these two works on the left bank of the Potomac? I will answer in the order presented, to the extent of my information.

1st. If the time occupied in making the late survey, from the Point of Rocks to Harper's Ferry, according to the order of the Chancellor of Maryland, may be taken as a criterion, and upon a knowledge of the fact that the difficult passes are more numerous and extensive (in the proportion to distance) between Harper's Ferry and

Cumberland, than they are between the termini of the survey referred to, then, the time required in executing [the necessary surveys, locations, and drawings, cannot be less than four or five years, which is less than a strict proportion between the part already surveyed and that which remains to be: for I consider that much time was *unavoidably* lost in the first survey by the commissioners, in not commencing operations simultaneously, and in settling the preliminaries and mode of procedure.

2d By taking the survey heretofore referred to as a standard whereby to estimate the cost of the surveys, &c. the cost cannot be less than \$45,000.

3d. In answering this interrogatory, I will premise by observing that as far up the Potomac as the Conococheague, I have minutely examined its left bank; above that river to Cumberland, I have seen the Potomac only at two places, but from a knowledge of the general character of its valley, acquired from two years' residence upon it, and from a familiar acquaintance with its left bank for one hundred miles above the District of Columbia; also, from information gathered from the many reports of Engineers on the subject, I am in possession of facts that will enable me to answer with an approximation to accuracy the interrogatories which has produced those preliminary remarks. From the above sources I have satisfied myself that the increased cost of construction will be at least \$150,000.

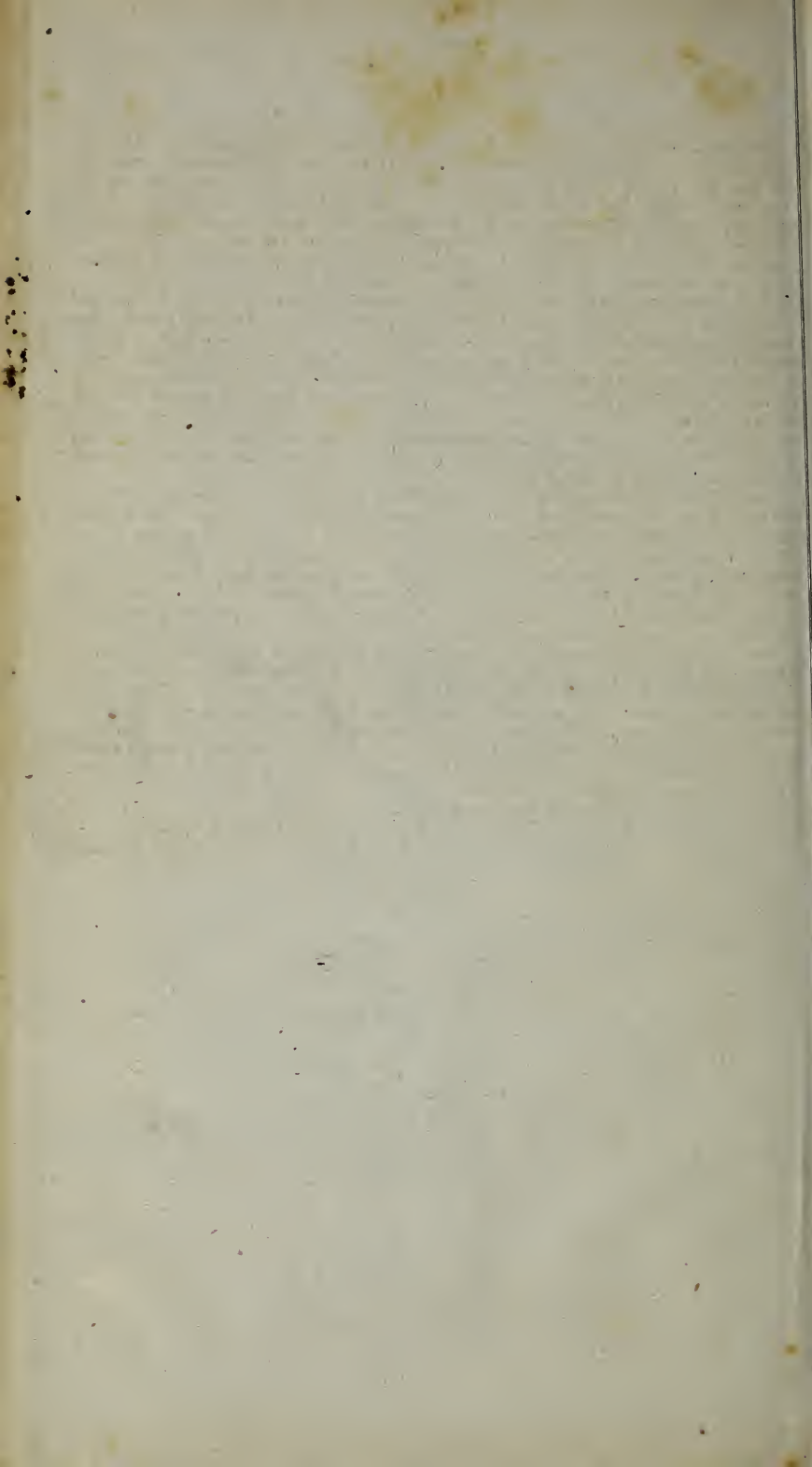
4th. Serious disadvantages arise in constructing the canal in connexion with the rail-road, from the necessity of placing the canal further into the river at the difficult passes, rendering the foundations less secure, exposing it in a greater degree to the action of the river upon its embankments, to greater hazard to its protection-walls from running ice and drifts, increasing the liability to breaches, both from the canal and river, rendering the necessity of repairs more frequent, and those repairs of greater magnitude. In addition to this, the difficulty and cost of procuring materials for these repairs, is very much increased.

The communication between the canal and the interior of the country, in some places, will be entirely cut off, and the canal at such places will be inaccessible, at many places it will be much incommoded, and interrupted at nearly all others. The inconvenience and expense of erecting warehouses and forming basins, and other appendages to the canal, will be much increased by the proximity of the rail-road.

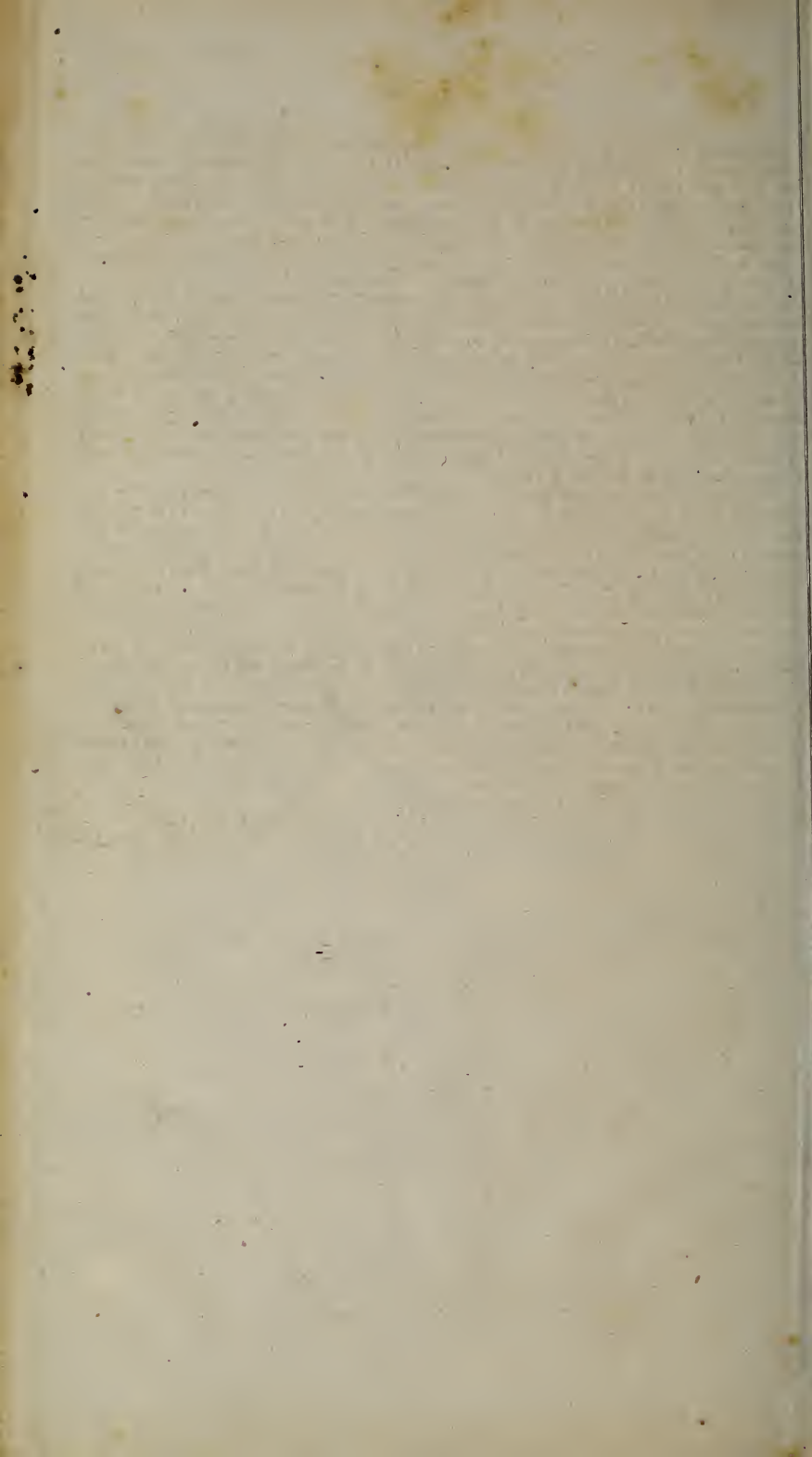
All these circumstances combine to deprive the canal of the benefits it would otherwise enjoy from a free and uninterrupted intercourse with the country, and they have a direct tendency to injure its commerce.

Respectfully submitted,

ALFRED CRUGER,
Civil Engineer, Ches. and Ohio Canal.







Chesapeake and Ohio Canal—(the late 1st, 2d, and part of the 3d, now comprehended in, and forming the) **FIRST RESIDENCY**. ABSTRACT of Work executed up to the 1st June, 1831, and estimated as yet to be executed.

[illegible]

INCIDENTAL WORDS

Pier, Basin, and Tide Lock	-	-	-	-	74,231	4,713	73,943
Locks	-	-	-	-	227,095	5,387	212,645
Lock Houses	-	-	-	-	13,644	2,708	10,135
Buildings, and work done at Market House in Georgetown	-	-	-	-	39,743	3,219	32,928
Aqueducts	-	-	-	-	12,212	3,920	21,404
Canals	-	-	-	-	80,438	1,454	51,673
Waste Weirs	-	-	-	-	5,649	-	59,491
Dams	-	-	-	-	29,616	9,875	15,491
Guard Lock and Feeders	-	-	-	-	15,268	196	-
Improvements	-	-	-	-	25,962	-	22,965
					1,267,666	60,161	1,327,836

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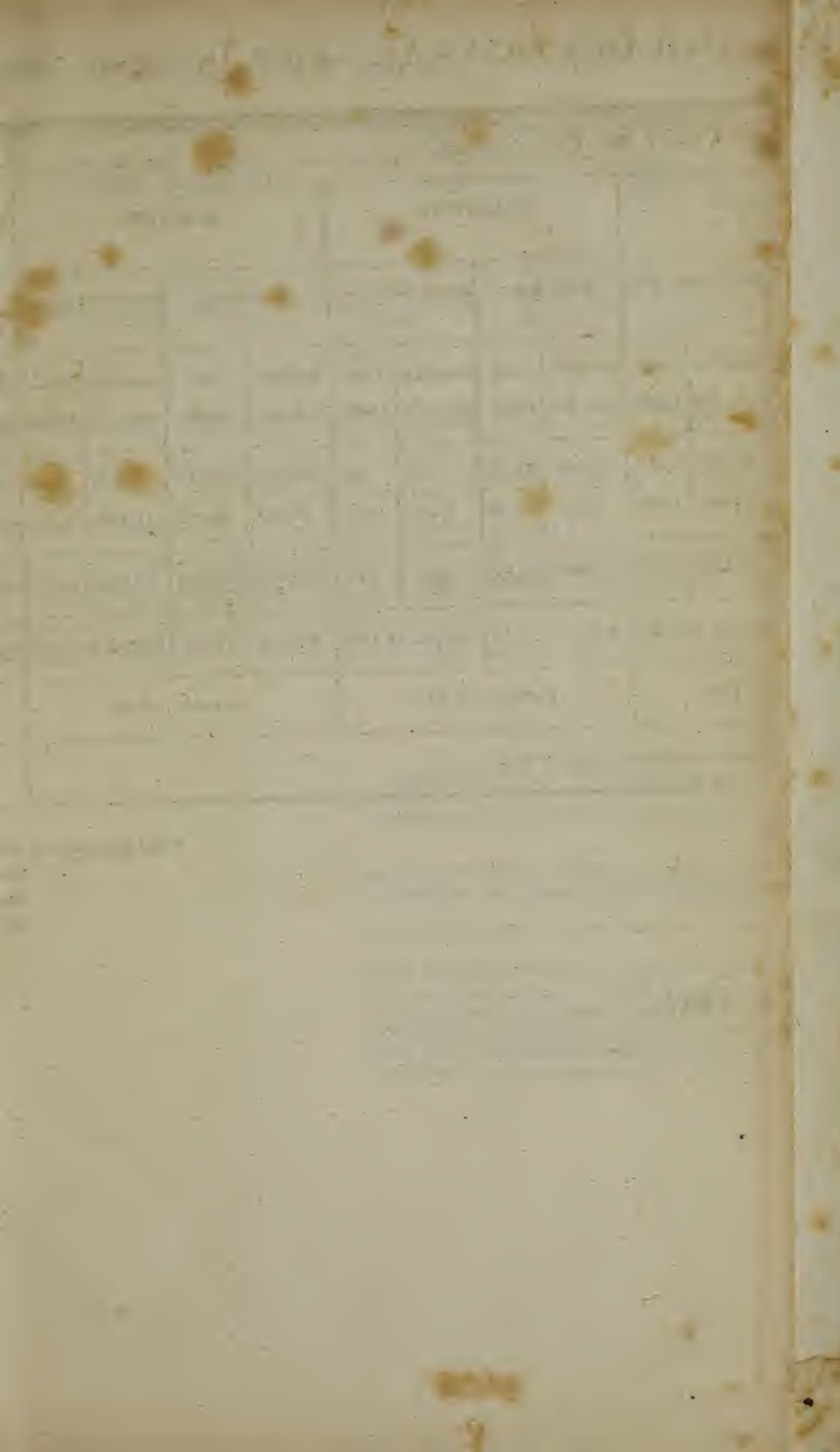
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Chesapeake and Ohio Canal—(part of the late 3d, the 4th, the 5th, now comprehended in and forming the) **SECOND RESIDENCY.** ABSTRACT of the Work executed up to the 1st June, 1831, and estimated as yet to be executed.

SECTION.	EXCAVATION OF THE CANAL.																				EMBANKMENT.								PUDDLING.				WALLING.								EXTRA WORK.		TOTAL OF WORK DONE.	TOTAL OF WORK TO BE DONE.	AGGREGATE GATE.																																																																																																																																																																																																																																																																																																																																																									
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	CONTRACTORS.		To be done.	Work done.	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.	Quantity.	Cost.	Dolls.	Dolls.																																																																																																																																																																																																																																																																																																																																																																						
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Statement showing the estimate by the United States' Engineers of the probable cost, exclusive of grubbing, land-rights, and contingencies, of the Chesapeake and Ohio Canal between Georgetown and Harper's Ferry, with a breadth, where easily obtained, of 48 feet at the water surface, 33 feet at the bottom, and 5 feet depth of water, compared with the actual cost, so far as executed, and estimated cost of completing the same portion of the Canal with a breadth, generally, of 60 feet at the water surface, 42 feet at the bottom, and 6 feet depth of water, exclusive of land-rights, fencing, and contingencies.

SUBDIVISIONS.	LENGTH.		GRUBBING.	EXCAVATION OF THE CANAL.								EMBANKMENT.		WALLING.		AQUEOUCTS.		LOCKS.						WASTE-WEIRS.		CULVERTS.		BRIDGES.		PUDDLING.		PAVING.		FENCING.		SUNDRIES.		AGGREGATE.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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7th SUBDIVISION—Extending from below Harper's Ferry to the mouth of Mono- cacy, according to the estimate of the United States' Engineers	19	—	—	—	—	—	—	—	787,030	180,081	165,440	33,088	52,806	158,400	33	48,825	3	36,000	—	28,000	—	—	3	1,200	25	7,500	19	6,700	37,400	4,488	3,000	2,430	19½	17,550	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Note.—The cost of the four Locks located in Georgetown is here included in the actual cost of the 11th Subdivision, which is made only to extend to Georgetown. This is done because the same lockage is included by the United States' Engineers in their 10th Subdivision.

The item of "Sundries," includes disbursements for general improvement of the Canal below Seneca, in widening and raising embankments, and filling up to their proper level the bot-
toms of such Sections as had settled upon the admission of water into it, &c. &c. as follows:

9th Subdivision	—	—	—	2,000
10th Subdivision	—	—	—	19,909
11th Subdivision	—	—	—	902
Making the sum of	—	—	Dolls.	22,811

\$2.50

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FOURTH

ANNUAL REPORT

OF

THE PRESIDENT AND DIRECTORS

TO THE

STOCKHOLDERS

OF THE

CHESAPEAKE AND OHIO CANAL COMPANY,

ASSEMBLED IN GENERAL MEETING,

ON

MONDAY, JUNE 4, 1832.

WASHINGTON:

PRINTED BY GALES AND SEATON.

1832.

THE UNIVERSITY OF CHICAGO

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FOURTH ANNUAL REPORT.

The Fourth Annual Report of the President and Directors, to the Stockholders of the Chesapeake and Ohio Canal Company, assembled in General Meeting, on Monday, the 4th day of June, 1832.

It was the intention, as well as the wish, of the President and Directors, to have printed, for distribution among the Stockholders, at the opening of their fourth annual meeting, the report required by the 8th section of their charter, of the proceedings of the Board, accompanied by a succinct view of the progress and future prospects of the great work committed to their charge, during the past year.

Pursuant to this purpose, the subjoined table of the receipts and disbursements of the funds of the company, descends only to the 1st day of the last month, comprehending a period of eleven months, instead of the just expired year; and all the calculations herein presented, relative to the past or prospective advance of the common enterprise, refer to that period.

The incessant labors of the Corps of Engineers, in preparing the final estimates of the various works completed on the line of canal below the Point of Rocks, united with the necessary preparations for extending its construction through the disputed ground, above that point, withheld from the knowledge of the Board, till within a few days past, many facts essential to a correct statement of the affairs of the company, and retarded the completion of this report to the present moment.

The President and Directors congratulate the Stockholders on the favorable reception, by the Court of Appeals of Maryland, of the memorial which constituted the final act of the last general meeting; and, on the prompt and final decision, by that high tribunal, of the long depending, and, so far as regarded this company, most disastrous controversy for the occupation of the ground, so early designated for the Chesapeake and Ohio Canal, along the left bank of the Potomac.

Had the delay been anticipated, which has rendered unproductive, for so long a period, the large sums expended on the part of the canal deprived of water, by being arrested at a point twelve miles short of its contemplated feeder from the Potomac, it would have well become the Stockholders, who early adopted the route, so often recommended for the location of the canal by experienced Engineers, to have carefully compared the opposite shores of the Potomac; and might, possibly, by changing their decision, have transferred the canal from the Maryland to the Virginia shore.

After the actual commencement of the work along the northeastern bank of the Potomac, it became the duty of the Board to avoid, if pos-

sible, the imminent hazard, as well as the great expense which would attend the crossing of that river, by permanent aqueducts of stone. The construction of such important works, of less durable materials, by occasioning the certain and long continued suspension of the use of the canal, at some future, and not very remote, period, was regarded, as alike inconsistent with the security of the navigation, with sound economy, and the public interest.

Disheartened by the procrastination of the legal controversy which forced these views upon the consideration of the Board, a majority of its members sought at one time to effect a compromise of so much of the ground of controversy, with the Baltimore and Ohio Rail-road Company, as excluded both companies from proceeding to Harper's ferry.

Baffled in this effort, by the refusal of that company to accede to the wishes of this, there remained ultimately no alternative, in the judgment of this Board, but the construction of an expensive feeder of six miles in extent, along the western margin of the Monocacy, and of descending locks, to connect the canal with the river at the Point of Rocks; or to await in patient, though confident hope, a final decision by the court to which they had appealed, of the unhappy controversy which had so long obstructed their progress. It was, therefore, with unfeigned gratification, that this decision, pronounced on the 5th of January last, was received by them, the ensuing day.

Of the many causes for rejoicing at this result, it was not among the least, that it admitted the indulgence of a hope, that, with the termination of the legal contest, that had so long subsisted between the two companies, who were parties to it, would cease every unfriendly feeling, to which it might have given rise. It was with peculiar pleasure, therefore, that this Board, as promptly as circumstances would permit, acceded to the request of the President and Directors of the Baltimore and Ohio Rail-road Company, to arrange a plan of crossing the canal to the Virginia shore, below the Point of Rocks. The other alternative, contained in the proposals of the Baltimore and Ohio Rail-road Company of the 19th day of January last, was presented as an alternative only, and had been, for some time, regarded, in the judgment of this Board, even while the anticipation of a possible decision, in favor of the prior claims of that company, was unavoidably presented to them, as injurious to the interests of both companies, and inadmissible by either. And if so considered by the Rail-road Company, as their decision manifested, who could pass the river Potomac, with a suitable bridge, at any elevation above its surface they might please to select for safety and convenience, how much stronger must have been that conviction on the part of the Canal Company, who, to cross the river at all, must adapt the elevation of a stone aqueduct, capable of holding and conveying over the Potomac a volume of water six feet deep, to the horizontal level of the canal, descending from above that point along the Virginia shore.

In the testimony of the Commissioner of the Court of Chancery, Mr. Roberts, an eminent Civil Engineer, sustained by that of Mr. Cruger, a Resident Engineer of this Company, submitted to the

Chancellor of Maryland, some of the grounds of the ultimate opinion of this Board are disclosed. Others they forbear to add. The opinion itself, it is due to themselves to state, had been entertained and expressed, some time before the late issue of the controversy between the two companies.

It is as unnecessary, it is believed, as it would be inconsistent with their present purpose, for this Board to advert to the verbal explanations, submitted by their presiding officer, in their behalf, to the Stockholders at their late extra meeting, along with the late resolution of the General Assembly of Maryland.

The high respect entertained by this Board for that honorable body, they have thought, would be best expressed by the course in relation to the request contained in that resolution, which they have hitherto pursued, and mean to continue.

In the brief exposition which they have here given of the antecedent measures of the Board, they have sought but to discharge an imperious duty to themselves and their constituents.

As soon as the intelligence reached the President and Directors, of the issue of the suit that had so long depended at Annapolis, a Board was convened for the purpose of extending the canal through the hundred miles required by the charter, under which they act, to be completed in five years from its commencement.

The whole Corps of Engineers was deputed to perform this duty, with power to engage such assistance as might be found necessary to expedite its completion.

The extreme severity of the winter, and the high water of the river, impeded and delayed the progress of the Engineers, so that, although proposals were invited, by a public notice of the ninth of January, for the construction of the entire line of canal, between the Point of Rocks and Williamsport, it was found necessary to countermand, on the 4th day of February, so much of this notice as respected the part of this line above the head of Harper's Ferry Falls, in order to prepare for letting out, at the period advertised, that portion of the canal extending thence to the Point of Rocks, and comprehending, along with the feeder, guard lock, and basin, calculated to admit into the canal the Shenandoah boats, the chief obstructions to the navigation of the main river, in its natural state, between the Great Falls and Cumberland.

Accordingly, fourteen miles of canal, extending from the 84th, to the end of the 112th section, comprising the guard lock and dam across the Potomac, immediately below the Shenandoah; eight lift locks; an aqueduct of three arches over the Kitoctan; and nineteen culverts, were let, on the 14th of March, under an obligation to commence the whole of those works immediately, and to complete them by the first of December next.

The contract prices of the various works on this part of the canal, augmented, by an allowance of five per cent. for contingencies, amount to \$324,183 20, of which sum \$14,629 had been disbursed on the 1st day of May.

While a portion of the Corps of Engineers was detached from the

main body, to survey and mark, for purchase or condemnation, the lands required for this part of the canal, and to supervise its construction; the rest were sent forward, with a discretionary authority vested in the two resident Engineers, who were commissioned to act conjointly, to call in any aid they might need, to expedite the definitive location, and prepare, for immediate contract, forty miles of canal above Harper's Ferry.

This space was subdivided, of necessity, into the portion lying below the next convenient feeder from the river above Harper's Ferry, and another, which must depend for a supply of water upon the construction of a feeder at some point still higher up the Potomac.

A position below the mouth of Opecon creek, in Virginia, a tributary of the Potomac, capable of being rendered navigable as high up as the vicinity of Winchester, having been before recommended by all the Engineers, who had examined and reported on the location of the canal, and being approved by the Engineer who conducted the recent survey, the Board proceeded, on the 2d of this month, to place under contract twenty-two and a half miles of canal, between the 112th and the 157th sections, including the last, which comprehends the dam and feeder near the mouth of Opecon.

In this distance are embraced an aqueduct across Antietam, twenty-four culverts, and six lift locks, together with a guard lock and dam, of considerable elevation, across the Potomac.

Added to the four sections immediately above the Harper's Ferry feeder, the entire distance, between the two feeders already contracted for, is twenty-four and a half miles. It is distributed into forty-nine sections, and comprehends, besides a guard lock, ten lift locks, overcoming an ascent of seventy-three feet in the river.

Power is expressly retained to alter, if found necessary on further investigation, both the elevation and position of the dam below Opecon; and, in the event of its being lowered, it is understood that one of the ten locks may be dispensed with, by giving an increased lift to that next below its intended position.

Supposing no change of the location, or plan of the dam, which, if altered in these respects, will be rendered as much cheaper, in construction, as a few of the upper sections may, by such alteration, be possibly augmented in price, the contract and estimated cost of the forty-nine sections, including the dam and guard lock, as well as the lift locks, on the sections next above the Harper's Ferry feeder that were let in March, adding five per cent. the Engineers' estimate for contingencies, will be \$788,197. The contracts for a part of the masonry, designed to be let on the 2d instant, were deferred till the 5th, for want of time, and on account of the imperfect form of many of the proposals.

All the sections, with two of the locks and five culverts, have been placed under contract.

It is confidently believed, however, that the contracts to be made for the dam, and the remaining masonry of this part of the canal, will not raise the price above the estimate of the Engineer, upon

which reliance is had, in the calculation here made of the cost of the works yet to be let.

The next position above Opecon, hitherto recommended for the fifth dam and feeder of the canal and approved by the Engineer charged with its selection, is at the mouth of Licking creek, sixteen miles and a half above Williamsport. Preparatory to letting out this feeder, and the fourteen miles of canal immediately below it, the Engineer has been instructed to ascend to that point, and to pursue the location, thence, as low down the river, at least, as Williamsport; it being the intention of the Board to proceed with the construction of the canal as far below this feeder as the present stock, and all other resources of the Company, may enable them to extend it.

It is obvious, that, to ascend with the construction of the canal, from the dam near Opecon, which is thirty-two miles, below the feeder, just described, would expose the Company to a loss, similar to that which has occurred upon the twenty-six miles next above Seneca and below the Point of Rocks, of awaiting for the use of any part whatever, till the feeder can be reached, on which reliance is had for an adequate supply of water to the whole line.

By descending, with the water of a feeder, the canal constructed in its vicinity may be brought into use before the part below it has been finished.

In this case, the great elevation of the dam near Opecon, will cause the back water of the Potomac to extend several miles above the high cliffs of rock, near Galloway's mill; and, should the funds of the Company not suffice, without further augmentation, to reach this still water, yet the part of the canal, which they will certainly suffice to construct in connection with the dam and feeder at Licking creek, will not only enable the Company to comply with the requisitions of their charter, but the canal boats, with full cargoes, to reach the still water, above the feeder near Opecon. It will also facilitate the extension of the canal toward this feeder, from time to time, as the difficult work at the heavy cliffs, above Galloway's mill, and the resources of the Company, may permit.

Along these cliffs, which continue for about three miles in succession, General Bernard and the United States' Board of Internal Improvements, with a view to economy, recommended the use of the natural bed of the river, with a tow-path along its precipitous shore.

The two civil Engineers, Messrs. Geddes and Roberts, whose survey and examination of the river immediately followed, advised the substitution of a canal, for a tow path and river navigation along those cliffs. A decision upon these different recommendations may be deferred for a short time, it is believed, with safety; and should the continuous canal be hereafter preferred, as the Board are inclined to believe, facilities for its construction, at a reduced price, will be afforded, by the intermediate completion of the connected lines above and below this formidable obstruction.

Another benefit is anticipated from the immediate construction of the dam at the mouth of Licking creek. It is here that the canal

approaches very near the artificial road, which, intersecting its actual location, a mile or two above, passes through the town of Hancock, at the distance of seven miles from Licking, on to Cumberland, and thence to Brownsville on the Monongahela, and Wheeling on the Ohio. This dam, it is ascertained, will back the Potomac so high up its bed, as to give three feet additional depth to the river at Hancock, and render that town a convenient depot for shifting the lading of the wagons, which descend this road, to the canal boats on the river, until the canal itself shall have reached some convenient point higher up the Potomac, or the contemplated termination of its Eastern section at Cumberland.

With a view to this desirable end, and in the confident hope that its accomplishment is not remote, the Board now proceed to re-survey the ground over which they have passed in this report, in order to regard it in another aspect, and to present such views as seem, to their judgment, both practicable and expedient, in relation to the funds with which the canal navigation may be extended to Hancock, for the present, and, promptly afterwards, to the Western termination of its Eastern section.

Although the apprehension should not be for a moment indulged, that the charter of the company would be endangered by their failure to construct one hundred miles of canal in five years from its commencement, considering the legal obstructions which have impeded its progress for more than three years of that period, yet this provision of the charter, and the interest of the stockholders, impose on the Company the obligation of diligently prosecuting their work to the extent here contemplated, while under the most favorable construction, no other delay could be justified, than the law, or a necessity more imperious, had occasioned.

Accordingly, the Board have first endeavored to ascertain the competency of the present resources of the Company, to complete one hundred miles of canal, by the Autumn of 1833, being within five years from the time when the first contracts were made, and the works actually begun, in the vicinity of Georgetown.

From the Treasurer's report of the first of May, 1832, and the list of subscribers to the stock of the Company, it appears that, on the 30th April, 1832, the subscribed stock, payable in money, as contradistinguished from the part payable in the shares of the former Potomac Company, amounted to

\$3,609,200 00

And that, of this stock, there had been then collected,
the sum of

1,959,087 00

Leaving, to be collected, the further sum of
which, after deducting an adequate allowance for
bad, or doubtful debts, viz:

1,650,113 00

70,113 00

Affords a balance of

1,580,000 00

To which, add cash on hand, at the date of the treasurer's report, after deducting a sum paid by the

corporation of Alexandria, in anticipation of its future instalments,	-	-	-	-	30,814 00
---	---	---	---	---	-----------

And there results a fund of	-	-	-	-	1,610,814 00
applicable to the following objects:—					

1st. To the payment of the retained money, reserved on the estimates already returned, for work done below the Point of Rocks, and of the estimates for work done below the Point of Rocks in the month of April,	40,841 00
---	-----------

2d. To the payment of sums due, or to become due, on assessments already made, or to be made, of damages, by way of indemnity for lands taken for the construction of the canal, between the Point of Rocks and the mouth of Tiber creek, supposed to be between 25,000 and	30,000 00
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3d. To the completion of the various works of the canal, yet unfinished, between the Point of Rocks and the same terminus, according to the estimate of the two resident engineers, including a considerable sum (near \$20,000) for the completion of works which may be delayed, without injury, to the use of the canal,	170,000 00
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4th. To the completion of the twelve miles of canal, and their appurtenances, between the Point of Rocks and the Harper's Ferry feeder, including the dam and guard lock at the latter, but exclusive of the sum of \$14,629, already expended on this work, according to the estimates of the engineers, modified, in some inconsiderable particulars,	310,000 00
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5th. To the completion of the 24½ miles of canal, between the Harper's Ferry feeder and that in the vicinity of Opecon, according to actual contracts, so far as they extend, and to the estimate of the engineer, modified in some inconsiderable particulars,	788,197 00
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The total amount chargeable for those several objects, being	1,339,038 00
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Which, deducted from the available stock, and cash on hand, viz:	1,610,814 00
--	--------------

Leaves the sum of	271,776 00
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to be applied to the portion of the canal between the feeder at Licking creek, and that next Opecon.

The portion of canal extending from the former, which will be required to make up 100 miles, when added to the part below, need not exceed fourteen miles; for which, the above sum affords near 19,500 dollars a mile; and as the lockage along this part of the line is inconsiderable, being much less in proportion than that below

the fourth feeder from the Potomac, and as the Resident Engineer reports the ground, from Licking to a considerable distance below Williamsport, with the exception of only two or three sections, to be very favorable for the construction of a canal, it is very possible, if not probable, that this sum may suffice to complete the fourteen miles above that town.

As the return of the estimates of the Engineer, now daily expected, may, however, call for a larger sum; as it would be very desirable to extend this part of the canal with the least possible delay, as far down as Williamsport, where a permanent communication with the river may be beneficially formed; and if funds can be promptly provided, as far as the sections of easy construction reach below this town, or to the head of the still water produced by the dam near Opecon; the Board have turned their attention to other resources, for the construction of this work, besides the funds before enumerated.

These comprehend, in addition to the canal tolls, certain houses and lots in Georgetown, and lands above it, acquired by the contracts made for the ground necessarily occupied by the canal, or with the view to dispense with the necessity of pass ways under or over it. The value of this property, exclusive of the mole across the mouth of Rock creek, may be computed at 12,000 dollars.

Next, the mole itself, constructed at great cost, chiefly of the earth removed from the deep cut in Georgetown, and regarded, both before and since its construction, as affording, by its secondary use, the means of reimbursing a part, or the whole of that expenditure. It is 1,057 feet long, and excluding the part which lies at the end of Washington street, affords, by its breadth, which is 160 feet, for the greater part of its length, a most eligible site for warehouses and stores. After reserving commodious streets along the river and basin, of from thirty to forty feet breadth, and to unite them, convenient alleys, occupying a part of the first story of two of the houses to be erected on the intermediate ground, the value of this property cannot, it is presumed, be overrated at 100,000 dollars.

To remove any possible doubt of the authority of the company to dispose of it, in the mode proposed, memorials were addressed to the several parties to their charter, pursuant to a resolution adopted by the Stockholders in general meeting, at the instance of the President and Directors. The Legislature of Virginia immediately complied with the wishes of the company, but the other parties to the charter have not yet acted on the subject. In the interim, the great benefit to the public, which would result from such an improvement of the mole, has prompted the Board to take the advice of counsel, as to the extent of the present power of the company over this property, and they have had the satisfaction to learn, that no doubt exists that the charter, as it now stands, authorizes the contemplated disposition of this valuable ground.

The extent of the power of the company over the water admitted into the canal, has been questioned, and memorials, pursuant to the instructions of the Stockholders, have been addressed to Congress, and the Legislatures of Virginia and Maryland, in order to remove

the restriction on that power expressed in the charter of the company. Pennsylvania, with provident sagacity, anticipated and removed this limitation by her act of incorporation; and Virginia unhesitatingly granted what the company subsequently asked. A decision by Congress on this subject, and by Maryland, has hitherto awaited the issue of certain suits, and especially of one carried up to the Supreme Court, in order to try the rights of certain claimants to the use of the water of the old canal of the Potomac Company, and of others, to the exclusive use, for all manufacturing purposes, of the entire water of the Potomac at the Little Falls. It has been the earnest desire of the Board to bring these suits to a speedy termination, and all the means which the greatest diligence could suggest, have been exerted for that purpose. The Supreme Court indulgently consented, more than two years ago, to take up, out of turn, a case, which should be agreed between the parties: but no agreement was found practicable. At their last session, although restrained by the pressure of other cases of prior standing, the Court agreed, at the instance of the Canal Company, to try one, which had been docketed during the term, provided the counsel would concur in saving the time of the Court, by submitting their respective arguments in writing. The adversary counsel, however, declined a proposition to this effect, submitted to them by the counsel of the company.

But, whatever legal limit may now restrain the power of the company to sell or let the use of the surplus water of the canal, elsewhere, no doubt can be entertained of the express authority granted them, so to dispose of the water descending from a higher level of the canal to fill a lower, or at the wastes required for the security of the works, and the preservation of the health of the neighboring population.

At each lock, or series of locks, therefore, as well as at all the wastes of the canal, the surplus water may be now disposed of. The value of this water may be reasonably computed at a considerable sum, not less certainly, if limited to the canal now used, than fifty thousand dollars. It may, and probably will, be found much to exceed it.

The preceding resources, exclusive of the canal tolls, may, therefore, be safely computed at a sum exceeding \$150,000, and if not profitably converted into money, might be pledged, as the basis of a loan, to that amount, in aid of the uncollected stock of the company, if required to construct one hundred miles of canal, by the autumn of 1833: by which period, the contracts last made, require the part of the canal, below Opecon, to be completed. Those, for the works below the head of Harper's Ferry Falls, limit the period of their completion, as has been stated, to the 1st of December next; by which time, or, at any rate, by the opening of the ensuing spring, it is confidently expected to bring the entire canal into use, from the still water, at the head of the falls, produced by the dam of the United States' armory, down to the mouth of the Tiber.

It may not be improper here to remark that no use of the mole, of the surplus water, or the company's land and lots, in and immediately above Georgetown, could be more appropriate than the disposition of them here proposed; by which, the company will be reimbursed a consider-

able part of the heavy sum expended in conducting the canal from a mile above that town, to the Rock Creek basin below it, and the city of Washington.

The cost of this part of the canal, and of the two sections, now constructing in Washington, including the Eastern abutment of the Alexandria aqueduct, is computed, in the preceding estimate, at \$423,000; and, deducting from it the entire cost of the five locks in Georgetown, which, if not constructed there, must have been made elsewhere, the extra cost of the extension of the canal below the point, once the subject of debate in a general meeting of the stockholders, is \$373,000, exclusive of certain land condemnations; and, with those, near or quite \$400,000.

To this extent, therefore, the expenditures below section D of the canal, or for two and a half miles above the mouth of Tiber creek, have diminished the resources of the Company, for extending their works towards Cumberland. The proposed appropriation of the mole, lands, lots, and waste water, on this part of the canal, may reimburse \$150,000 of this expenditure, so as to reduce the above sum to \$250,000; which, unless the water power of the Company be enlarged to the extent, to which they have developed its possible use, by their enlarged canal, will be the price paid for the preservation of harmony among the corporate subscribers to their stock, and for the completion, somewhat earlier than was absolutely necessary, of the basin, or harbor, which should be constructed at the termination of every canal of the length and dimensions of this, in order to accommodate while awaiting the delivery or receipt of their cargoes, and to preserve from injury the numerous boats engaged in its navigation.

The mole, including the tide lock (which any basin would require) and the basin of Rock creek, containing eight acres of water, and susceptible of an easy enlargement to twice that extent, is computed at \$87,402 of the \$250,000, exclusive of the filling from the deep cut of section A, and of land condemnation for its site.

In strict justice to the subject of these remarks, it should not pass without notice, that the average cost per mile, of two and a half miles of canal between section D and the mouth of the Tiber, a portion of the entire line, as likely to be productive of revenue to the Company as any other similar extent on the whole canal, should be deducted from the remaining \$162,598 thus expended.

To return to the main object of this inquiry. Another, and, of itself, an adequate resource for meeting any possible deficiency of stock, for the prompt construction of the canal between Licking and Williamsport, will be found in the nett revenue of the canal itself. Of the propriety of pledging this revenue for such an object, the practice of almost every canal, and indeed almost every incorporated road company in the United States, affords an example.

In this case it would be unnecessary to extend such loan beyond a sum, the interest of which would be within the lowest possible estimate of the income of the Company.

How far that may be augmented, after the canal shall have reached Hancock, in the mode proposed, it is impossible to determine, with pre-

cision. At that point the line of improved navigation will intersect, as has been remarked, and border, for several miles, upon the artificial road connecting Hancock, by way of Cumberland, with Brownsville and Wheeling. Exclusive of ascending loads of merchandise, plaster of paris, salt fish, and various supplies, destined for the West, descending cargoes of commodities brought over land, to Hancock, for the markets of the East, will swell the navigation of the canal. Bituminous coal, now brought down in considerable quantities to Williamsport from Cumberland, will descend in boats of 100 tons burden, after the ensuing winter, from Hancock, to the District of Columbia. The products of the rich country, not only of Maryland, but of Pennsylvania, in the vicinity of Hancock and Williamsport, whether designed to reach Baltimore by the Rail Road, now at the Point of Rocks, or to make a continuous voyage to the markets of the Potomac, will also quit their present mode of laborious and costly carriage, for the easier and cheaper transit by water. The lumber of the numerous mountains, intersected by the Potomac, which has not yet appeared on tide water, will come in successful competition with that, which now arrives, from the Chesapeake, in the District markets.

But, to look to the gross amount of tolls of the last year only, as the definite measure of a revenue, on which to ground a loan, should one be needed; and this cannot be computed at less than \$31,500.

The net income from this source has, in the first two years of the use of the canal, been greatly reduced by deductions for its necessary repairs. It will be proportionably augmented, with the diminution of those repairs; as experience on this, and all similar works carefully constructed, has invariably shown. The cost of the repairs during the eleven months next preceding the 1st of May, has amounted to \$9,550. This expenditure has occurred chiefly upon the heavy embankments of the part of the canal immediately above Georgetown, into which the water was let within the last eight or nine months, including the past winter. A very inconsiderable sum has been required to keep in repair the twenty miles above, being more than nine-tenths of the whole now in use. The repairs of the Union Canal of Pennsylvania, a canal eighty miles long, and attended with peculiar difficulties in its progress, amounted, for the last year, to less than 2,800 dollars.

Deducting from the present gross revenue of the Chesapeake and Ohio Canal, for the pay of lock keepers and collectors, \$5,000; and for current repairs, more than twice the sum expended for that purpose, on the Union Canal, in the past year; and allowing nothing whatever, for the future augmentation of the tolls of this canal, its net income may be confidently computed at \$20,000: a sum, which will afford an ample security for a loan, in anticipation of further subscriptions, exceeding any amount that may be needed to complete the one hundred and eight miles of canal, and eighteen miles of still water navigation, below Hancock, in Maryland.

In this very moderate view of the resources of the company, present and to come, the grounds are presented of the confidence enter-

tained by the President and Directors, that they have abundant means of fulfilling to the letter, every obligation of the charter of the company, and every rational public expectation, as to the progress of the work, that their former reports may have excited.

That extension of the canal, by which, a part of the capital stock of the company has been diverted, for a time, from the works above, to the construction of those on tide water, which might undoubtedly have been deferred, or forborne altogether, was, let it be remembered, a measure of the Stockholders themselves, adopted against the prior recommendation of the President and Directors, who finally, though reluctantly, interposed their advice, to preserve the harmony of the company.

The very costly works in, and immediately above Georgetown and Washington, however ultimately designed and calculated to promote the prosperity of those cities, and coupled with the Alexandria aqueduct, across the Potomac, for the advancement of the lowest port of the District, and its third market, every past estimate of this Board has sedulously excluded from the general estimate of the cost of the line of canal, above those works, on account of their origin and use, as well as the peculiar resources which they have developed or improved.

In any final estimate of the average cost, per mile, of the entire canal, the expense attending its Eastern termination should be blended with any similar expenditure which may be required, at its Western terminus, in Pittsburgh, and with the future cost of passing the intervening mountain: whether that be effected, by inclined planes and a rail-road, or by the continuous canal and tunnel, proposed by the United States' Board of Internal Improvement, and by succeeding Civil Engineers. The aggregate cost of these difficult works should be distributed over the connected line of three hundred and forty-one miles, passing through the centre of the Union, and the seat of its General Government, by which, the Chesapeake and Ohio Canal is designed to unite, as its title indicates, and the first resolution of its Stockholders, pursuant to their charter, decided, the tide of the Atlantic, with the steamboat navigation of the great rivers of the West.

In the anticipations necessary to be made of the probable cost of this work, the President and Directors have hitherto relied on the prior calculations of skilful Engineers, and the best lights of experience within their reach. When the increased dimensions, and consequent utility of the canal are considered; the plan and execution of its various works are carefully examined; their actual compared with their estimated cost: and the circumstances under which those estimates were made are duly weighed; there will be left, it is believed, in the retrospect of the past, but little to regret.

The company have, however, arrived at a stage of their enterprise, when its practicability, on a scale truly national, and at a cost wholly incommensurate with its importance to the Union, having been clearly manifested, it is expedient to renew, with becoming zeal, an appeal for further pecuniary aid, to the several parties, to whose legislation it owes its origin, and successful prosecution.

Provision should be made for completing the canal along the short distance of still water, which may remain above the dam immediately below Opecon; and for extending it, to Cumberland, from the feeder a few miles below Hancock. The entire length of canal, to be supplied, will amount to near eighty miles, and its cost will not fall short of one and a half millions of dollars. Should the price of labor continue at its present very high rate, it may, and allowing for the peculiar difficulty of constructing a canal, along the cliffs opposite the mouth of Opecon, it probably will, exceed this sum; and reaching near, or quite two millions, make the entire cost of the Eastern section; including the works in the District of Columbia, near six millions of dollars. Some considerations fortify the belief, that the entire cost of this section of one hundred and eighty-six miles may fall short of this estimate. At the commencement of the canal, the wages of labor, along the valley of the Potomac, exceeded, but little, one moiety of their present amount: and several causes which led to their sudden augmentation are about to cease, among them, the ill health of the valley of the Potomac, below the Blue Ridge, and the great demand for labor, on the canals of Pennsylvania; some of which were conducted, at a distance, not exceeding eighty miles, from the Potomac.

Moreover, the descent of the river, and consequently, the lockage of the canal, in the eighty-six miles, below the Opecon dam, exceeds by more than fifty per cent., that of the one hundred miles above. The descent from Cumberland, to Opecon, being at the rate of two feet six inches in the mile, and the descent from thence, to tide water, exceeding three feet nine inches.

In looking around for resources to complete the Eastern Section of the canal, those which must naturally present themselves, are further subscriptions of stock, and the sale of the water power created by the dams constructed across the Potomac.

Virginia, in giving her ready assent to the application of this power on a canal now assured to lie exclusively within the jurisdiction of Maryland, has surrendered to the latter, all the advantages for manufacturing establishments, which may arise from a judicious exercise of this otherwise dormant resource. The benefit which Maryland may realise to her arts, population, and wealth, from a repetition of manufacturing towns in the vicinity of all the feeders of the canal, from the river Potomac, it is difficult to calculate; but it greatly enhances the claim of the corporation, which has assured so great a benefit to this flourishing commonwealth, for a further subscription to its stock.

And success may be more confidently anticipated, from a renewed application for pecuniary aid to the Legislature of this State, since, above the point of connexion of the rival work of Baltimore, with the canal, it must hereafter become a work of equal interest to Baltimore, the emporium of Maryland, as to the District of Columbia.

The arrival of the canal, at Hancock, within a few miles of the State of Pennsylvania, and the obvious facility of extending a lock and dam navigation, up the Antietam, to Hagerstown, and the Conogocheague

to the vicinity of Chambersburg, apart from the connexion of the canal, by artificial roads, with the interior of that enterprising commonwealth, will, it is confidently believed, conciliate her favor towards a work destined, ultimately to aggrandise her great western mart of commerce and manufactures, at the head of the navigation of the Ohio.

From Virginia, it is apprehended that but limited aid will be afforded to the Eastern Section of the canal; but equal benefit may be derived to its revenue and utility from the improvement of the navigation of those great branches of the Potomac which penetrate the bosom of that commonwealth; and drain a country of greater extent, than that, which is traversed by the main river, above their respective intersections with its course. On the Congress of the United States, in the absence of the aid hitherto anticipated from this State, the Chesapeake and Ohio Canal Company must, therefore, mainly rely, for the means of completing the Eastern Section.

It is accordingly recommended, that, while the memorials to the States of Pennsylvania, Maryland, and Virginia, are renewed, another be presented to the Congress of the United States, for an additional subscription towards this object.

The various works on the canal, between the Point of Rocks and the basin in Georgetown, which had been permitted to proceed, very tardily, for many months, in consequence of their utter inutility without a supply of water, and the remoteness of that supply, in point of time, have, notwithstanding, reached very near their final completion. The Monocacy aqueduct, a work of very solid structure, and necessarily of great cost, withstood the extraordinary ice freshets of the last winter and spring, notwithstanding the centre of one of its arches was swept away; and the ring stone and sheeting of the adjacent arch left without any lateral support, except from the adjacent pier.

All the arches are now closed, and the whole work in such progress, as to leave no doubt of its completion before the water can be admitted from above.

Having been called upon by the Corporation of Washington to fulfil the resolution of the Stockholders at a former meeting, the portion of the canal between the Rock Creek basin and the mouth of the Tiber, has been placed under contract. At the instance of the Corporation of Alexandria, the eastern abutment of the aqueduct over the Potomac, making part of the contemplated branch from the main canal to the harbor of that city, has been advertised to be let; and the cost of both works is comprehended in the sum of \$170,000, making part of the anticipated expenditures of the ensuing year.

The account rendered of the tolls of the canal, for the eleven months which expired on the 30th of April, is \$25,108 93 cents, to which may now be added those for the month of May, per returns just received, \$6,400 32 cents, making the tolls for the year amount to \$31,509 25 cents, being an excess beyond those of the previous year of \$2357 90 cents. The stationary condition of the navigation of the Potomac, along which the canal opened in October, 1828, continues in use, at the present time, to an extent very little surpassing that which it then occupied, or from the Seneca feeder to the basin of

Rock Creek, may explain the cause of this inconsiderable augmentation of revenue.

Other interests of the company have engaged a part of the attention of the Board in the past year. Among them, the first in importance regards the future extension of branches from the main stream up Goose Creek, which empties its water into the Potomac, below the Kitoctan, and the Shenandoah, the Cacapon, the South Branch, on the Virginia side of this river; as well as the Antietam and the Cogocheague, on that of Maryland.

The details of these efforts would swell this report to an unusual length, but will be submitted to the Stockholders, if desired.

In the suit, in behalf of certain creditors of the Potomac Company, the plaintiffs have appealed from the unfavorable judgment of the Court of Washington county, to the Supreme Court of the United States.

The Board have instructed their counsel to afford every facility for obtaining a final decision of the several questions involved in this case, in order to ascertain, as early as possible, the legal extent of the responsibility of the Chesapeake and Ohio Canal Company for the acts of their predecessors.

The memorial presented to Congress, pursuant to the order of the Board, in relation to the commencement of the Western Section of the canal, with resources to be specially subscribed for that object, was committed, in the Senate, to a distinguished member from the State of Pennsylvania, by whom, the agency of her Representatives, in both Houses, had been requested, to aid in effecting the object of the memorial; and all proceedings on the subject, in the House of Representatives, were suspended, as he was advised, to await the issue of the application made to that honorable body. A letter has been addressed to this gentleman, by the President of the company, requesting information of the progress of this memorial; the answer to which, when received, will be submitted to the Stockholders.

To the object sought to be attained by the State of Pennsylvania, the commencement of the Western Section of the canal, the Stockholders will find, from a prior report, that the State of Virginia promptly gave her assent.

Of the various objects presented by the memorials of the Stockholders to the Legislature of Maryland, at their last session, that only which pertained to the police of the canal, was definitively and favorably acted upon; and a bill has passed the House of Representatives, and is now before the Senate, which, with a slight modification, to guard the act of Maryland from misconstruction, confirms its several provisions. It will, when passed, prove of immediate and great value to the company, by supplying an obvious defect of their charter.

During the last year, much valuable information has been collected by the Board, in connexion with the interesting question, as to the relative cost and utility, in England and America, of canals and railroads.

This information was carefully embodied in a memorial of great length, presented to the House of Representatives, and printed by

their order, at the request of the Committee on Internal Improvement. The Board beg leave to refer, for its contents, to the memorial itself; about one-half of which now makes, by a subsequent order of the House, part of a public document, of which several thousand copies have been ordered to be printed for distribution. The increased interest which is daily manifested, in every part of the United States, in the subject, to the investigation of which, this document leads, will give to it extensive currency, and suggest, it is hoped, further and more useful inquiry.

In the ultimate result of such researches, the Stockholders of this company have the deepest interest. In contemplating the present state of this question, they have every reason to persevere in the decision, by which, they have so long resisted every effort to divert them from the prosecution of the noble and useful enterprise in which they are engaged.

The spectacle which has recently been presented, of a single horse of moderate size and strength, drawing 512 barrels of flour, in a heavy boat, with apparent ease, a distance of 22 miles, through twenty-three locks, in a single day, is calculated, of itself, to countervail the numerous theories of the utility of rail-roads, by which the public mind has been perplexed; while the recent estimate submitted to the Executive of Maryland, of near \$50,000 a mile, as the cost of 29 miles of the proposed rail-road, from the District line, towards the city of Baltimore, should put to rest the arguments recently urged upon the American public, as to the superior cheapness of this species of internal communication.

The table extracted from the memorial to which allusion has been made, and appended to this report, manifests the continued use of those canals in England, which were expected to be superseded by rail-roads, and shows that the panic created among the proprietors of canal stocks, by the first exhibitions of the Liverpool and Manchester rail-road, has long since subsided.

Subscribed on behalf of the President and Directors.

C. F. MERCER,

President of the Chesapeake and Ohio Canal Company.

JUNE 4, 1832.

APPENDIX.

A.

Abstract of Receipts and Expenditures on account of the Chesapeake and Ohio Canal Company, to the 30th day of April, 1832.

April 30, 1832.		
To capital stock for amount of instalments paid to date, agreeably to returns received, - - -		\$1,959,087 41
To unclaimed dividends of the Potomac Company, received from the late Treasurer, for amount due sundry stockholders, - - -		366 30
To Potomac Company, received from the late Treasurer, - - -	\$131 87	
To do. received from John Strider, for balance due by him, - - -	237 30	
To do. received from Jacob Payne, on account, - - -	36 18	
To do. received for old iron sold, - - -	13 17	
	<hr/>	418 52
To toll account received to date, - - -		69,025 91
To acquisition of lands received from Thomas C. Wright, for old houses condemned and sold, - - -	357 60	
To do. received from C. F. Mercer, Esq. for an unexpended balance, (31st May, 1830) - - -	672 31	
	<hr/>	1,029 91
To profit and loss received for interest and gain on sales of Maryland stocks, - - -		4,703 03
To interest account received on judgments against delinquent stockholders, - - -		114 49
To law expenses received for costs of suits against delinquent stockholders, - - -	189 03	
To do. received from C. F. Mercer, Esq. for an unexpended balance, (31st May, 1830) - - -	80 00	
To do. received from Baltimore and Ohio Rail Road Company, for costs of suit awarded in courts of Maryland, - - -	1,017 77	
	<hr/>	1,286 80
To construction of the canal received for materials sold the Penitentiary, - - -	82 20	
To do. received of George H. Smoot, for rent of saw mill at the Great Falls, - - -	75 00	
	<hr/>	157 20
To Engineer Department received of Baltimore and Ohio Rail Road Company for costs of survey, awarded in courts of Maryland, - - -		2,500 24
To Corporation of Alexandria, received in anticipation of future instalments, - - -		27,079 99
		<hr/> <hr/>
		\$2,065,769 80

April 30, 1832.

By requisitions paid and charged to—

Contingent expenses of Chesapeake and Ohio Canal					
Company,	-	-	-	-	\$6,731 61
Pay of officers,	-	-	-	-	24,740 79
Construction of the canal,	-	-	-	-	1,774,010 95
Engineer department,	-	-	-	-	81,508 60
Western section,	-	-	-	-	4,026 08
Stationary,	-	-	-	-	1,101 38
Printing,	-	-	-	-	4,528 48
Postage,	-	-	-	-	283 37
Acquisition of lands,	-	-	-	-	92,786 12
Law expenses,	-	-	-	-	11,255 70
Potomac company,	-	-	-	-	5,552 68
Do. unclaimed dividends,	-	-	-	-	5 55
Interest account,	-	-	-	-	1,343 84
					<hr/>
					\$2,007,875 15

By balances to the credit of the Chesapeake and Ohio Canal Company in—

Office Bank United States, Washington,	-	-	-	-	15,512 88
Bank of Washington,	-	-	-	-	8,596 56
Bank of the Metropolis,	-	-	-	-	8,721 09
Patriotic Bank,	-	-	-	-	9,685 28
Bank of Alexandria,	-	-	-	-	247 10
Bank of Potomac,	-	-	-	-	6,151 11
Farmers and Mechanics' Bank,	-	-	-	-	7,569 42
Office Valley Bank, Charlestown,	-	-	-	-	872 63
Do. Leesburg,	-	-	-	-	109 50
Hagerstown Bank,	-	-	-	-	429 08
					<hr/>
					57,894 65
					<hr/>
					\$2,065,769 80
					<hr/>

TREASURER'S OFFICE CHESAPEAKE AND OHIO CANAL CO.

Georgetown, May 8, 1832.

C. SMITH, Treasurer.

Statement of Produce,

April, 1832; with the Tolls which have

			ASCENDING TRADE.							Tolls accrued.
	Tobacco, Hogsheads.	Wheat, Bushels.	Iron—Pig, Bar, and Castings, Tons.	Wood, Cords.	Sundries.	Fish, Barrels.	Salt, Bushels.	Plaster, Tons.	Sundries.	Dolls. Cts.
1831.			43	-		-	-	-		3,880 38
June, - -	5	2,905	23	-		-	-	-		1,183 94
July, - -	16	350	8	-	*	46	89	15		2,639 96
August, - -	9	1,280	-	-		48	122	7		1,644 71
September, - -	-	210	-	-		51	282	15½		2,872 34
October, - -	-	-	-	-		38	408	14		2,078 68
November, - -	-	-	-	-						
1832.			-	-		7	45	61½		4,069 48
February 12th,	-	100	-	36		25	112	80¼		3,970 16
March, - -	-	3,465	-	1,028		206	76	127		2,769 28
April, - -	-	1,800	-							
	30	10,110	6	74	1,064	421	1,134	320¼		25,108 93
Add returns of } May, since rec. }	-	2,728	0	21	343	785	472	37		6,400 32
For year end'g } May 31, 1832, }	30	12,838	6	95	1,407	1,206	1,606	357¼		31,509 25

JOHN P. INGLE,
Chesapeake and Ohio Canal Company.

April 30, 1832.

By requisitions paid and charged to—

Contingent expenses of Chesapeake and Ohio Canal

Company, - - - -	\$6,731 61
Pay of officers, - - - -	24,740 79
Construction of the canal, - - - -	1,774,010 95
Engineer department, - - - -	81,508 60
Western section, - - - -	4,026 08
Stationary, - - - -	1,101 38
Printing, - - - -	4,528 48
Postage, - - - -	283 37
Acquisition of lands, - - - -	92,786 12
Law expenses, - - - -	11,255 70
Potomac company, - - - -	5,552 68
Do. unclaimed dividends, - - - -	5 55
Interest account, - - - -	1,343 84

\$2,007,875 15

By balances to the credit of the Chesapeake and Ohio Canal Company in—

Office Bank United States, Washington, -	15,512 88
Bank of Washington, - - - -	8,596 56
Bank of the Metropolis, - - - -	8,721 09
Patriotic Bank, - - - -	9,685 28
Bank of Alexandria, - - - -	247 10
Bank of Potomac, - - - -	6,151 11
Farmers and Mechanics' Bank, - - - -	7,569 42
Office Valley Bank, Charlestown, - - - -	872 63
Do. Leesburg, - - - -	109 50
Hagerstown Bank, - - - -	429 08

57,894 65

\$2,065,769 80

TREASURER'S OFFICE CHESAPEAKE AND OHIO CANAL CO.

Georgetown, May 8, 1832.

C. SMITH, Treasurer.

B.

Statement of Produce, and other articles, transported on the Chesapeake and Ohio Canal, from 1st of June, 1831, to 30th April, 1832; with the Tolls which have accrued thereon.

		DESCENDING TRADE.																				ASCENDING TRADE.					Tolls accrued.	
		Tobacco, Hhds.	Wheat, Bushels.	Flour, Barrels.	Bayn, Shorts, &c. Bushels.	Rye and Chop, Bushels.	Corn, Bushels.	Corn Meal, Bushels.	Flax and other seed, Bushels.	Oil, Barrels.	Hemp, Flax, Pounds.	Whiskey, Barrels.	Hogs, Number and weight. Pounds.	Bacon, Pounds.	Lard and Butter, Pounds.	Leather, Pounds.	Lime and Plaster, Bushels.	Stone, Perches.	Coal, Bushels.	Iron—Pig, Bar, and Castings, Tons.	Wood, Cords.	Sundries.	Fish, Barrels.	Salt, Bushels.	Plaster, Tons.	Sundries.	Dollr. Cts.	
1831.																												
June, - -	-	5	2,905	22,524	1,502	70	250	-	-	1	3,000	355	5,000	500	550	-	-	-	-	-	43	-	-	-	-	-	-	3,880 38
July, - -	-	16	350	6,600	2,971	165	-	-	-	-	-	174	-	1,200	700	-	-	-	-	-	23	-	-	-	-	-	-	1,183 94
August, -	-	9	1,280	14,096	1,355	205	1,275	300	-	-	2,240	277	-	-	300	-	-	-	-	8	-	-	-	46	89	15	2,639 96	
September,	-	-	210	9,309	1,755	-	620	-	-	-	-	251	-	-	600	1,000	bbls.ccm't6	-	-	-	-	-	-	-	-	-	-	1,644 71
October,	-	-	-	16,616	2,130	6	-	-	-	-	-	408	-	-	210	6,790	-	-	510	-	-	-	-	51	282	154	2,872 34	
November,	-	-	-	2,027	300	-	-	-	-	-	-	7	-	-	100	-	-	32	396	-	-	-	-	38	408	14	2,078 68	
1832.																												
February 12th,	-	-	100	23,241	645	-	-	-	-	-	-	303	5,000	500	1,100	-	-	-	-	-	-	-	-	7	45	614	-	4,069 48
March, - -	-	-	3,465	22,928	4,727	139	325	-	-	-	-	280	-	4,250	2,320	-	-	120	-	-	-	36	25	112	804	-	3,970 16	
April, - -	-	-	1,800	13,917	2,150	504	202	-	oats 50	-	-	286	3,000	18,350	1,221	-	-	1,332	-	-	1,028	-	206	76	127	-	2,769 28	
	30	10,110	131,258	17,525	1,089	2,672	300	50	-	5,240	2,341	13,000	24,800	7,101	7,790	bbls. 6	1,484	906	74	1,064	-	421	1,134	3204	-	25,108 93		
Add returns of May, since rec. }	-	2,728	51,138	1,480	638	1,218	-	flax 10	2	8,900	762	1,058	59,400	6,480	-	-	15	3,925	300	21	343	-	785	472	37	-	6,400 32	
For year end'g May 31, 1832, }	30	12,838	162,396	19,005	1,727	3,890	300	60	2	14,140	3,103	23,580	84,200	13,581	7,790	bbls. 21	5,409	1,206	95	1,407	-	1,206	1,606	3374	-	31,509 25		

* Six thousand Stand of Arms.

CANAL OFFICE, WASHINGTON, June 2d, 1832.

JOHN P. INGLE,
Clerk Chesapeake and Ohio Canal Company.



land, at various periods.

Names of the se Lines of D	same time.	Length of each Canal, in miles.	Lockage, in feet.	Cost, in pounds sterling.	Date of comple- tion.	REMARKS,
	s. d.			£.	Anno.	
Ardrossan,	-	33½	170	253,000	1799	
Barnesley,		14	120	97,000	1812	
Birmingham,	10	22½	204	115,000	1772	
Bolton and Bury,		15	187	97,000	1797	
Carlisle, -		46	380	160,000	1776	
Chesterfield,		27	96	120,000	1790	
Coventry,		18	80	80,000	1794	
Cromford,		9	78	90,000	1794	
Derby, -		11½	181	-	1797	
Erewash,		35	321	421,525	1790	
Forth and Clyde,	12 8					
Glamorganshire,		93½	760	2,000,000	1805	
Grand Junction,		33½	148	124,000	1799	
Grantham,		130	841	600,500	1774	
Leeds and Liverpool		21½	230	84,000		
Leicester,		9½	41	-	1776	
Loughborough,	10	-	-	-	-	Navigation.
Milton Mowbray,		-	-	-	-	Navigation.
Mersey and Erwell		17½	1,057	275,330	1796	Inclined planes.
Monmouthshire,	-	12	96			
Monkland,		14	-	35,000	1798	
Neath, -		15	-	-	1802	
Nottingham,		91½	269	330,000	1790	
Oxford, -		17½	155	70,000	1797	} Inclined planes.
Shrewsbury,		7½	453	47,500	1792	
Shropshire,	10	8½	138	185,000	1802	
Somerset Coal,		46½	394	100,000	1772	
Stafford and Worc		5	191	30,000	1776	
Stourbridge,		8	108	20,000	1796	
Stroudwater,		17½	366	90,000	1798	
Swansea, -	10					
Trent and Mersey,		25	-	180,000	1799	
Warwick and Birm		15	-	130,000	1799	
Warwick and Nap		23	270	160,000	1794	
Wyrley and Essin						

Liverpool and Man	8	29½	-	800,000	1830	
Cromford, High L						
Canterbury,	-	-	-	-	1803	
Cheltenham,						
Croydon, -						
Jersey, -	0 17					
Severn and Wye,	2 4					
Forest of Dean,	6					
Stockton and Dar						
Monmouth,						
Clarence,						

* Price in 1824; to which they add the following remark: "From the above it appears 51½ per cent. per annum; and are now worth £9,287, more than six times the



Description and statement of the prices of the Stock of certain Canals and Railways in England, at various periods.

Names of the several Canals and Lines of Navigation.	Original cost of each share, in pounds sterling.	No. of shares.	Price of each share in 1821.	Dividend on each share, at that time.	Price of the same in March, 1828.	Dividend at the same time.	Price of each share in Jan. 1831. (Trade List.)	Dividend at the same time.	Price of each share Nov. 1, 1831. (Trade List.)	Dividend at the same time.	Length of each canal, in miles.	Lockage, in feet.	Cost, in pounds sterling.	Date of completion.	REMARKS.
£. s.	£.	£. s. d.	£.	£.	£.	£. s. d.	£.	£. s. d.	£.	£. s. d.			£.	Ann.	
Ardrossan, - - - - -	-	-	-	-	-	-	-	-	-	-	33½	170	253,000	1799	
Barnesley, - - - - -	160	5,720	300	13 -	-	-	215	10 -	210	10 -	11	120	97,000	1812	
Birmingham, - - - - -	17 10	4,000	203	12 10	565	20	270	12 10	244	12 10	22½	120	115,000	1772	
Bolton and Bury, - - - - -	250	477	-	-	-	-	106	6	106	6	15	187	97,000	1797	
Carlisle, - - - - -	50	1,600	490	-	-	-	-	-	-	-	-	-	-	-	
Chesterfield, - - - - -	100	1,500	150	8	120	8	170	8	170	8	46	380	160,000	1776	
Coventry, - - - - -	100	509	1,200	44	999	44	800	44	730	50	27	96	120,000	1790	
Cromford, - - - - -	100	460	400	19	-	-	420	19	410	19	18	80	80,000	1794	
Derby, - - - - -	100	600	150	7 10	-	-	150	6	120	6	9	78	90,000	1794	
Erewash, - - - - -	100	231	1,400	72	1,000	58	700	70	600	54	11½	181	-	1797	
Forth and Clyde, - - - - -	100	1,297	570	25	-	-	600	27	600	27	35	321	421,525	1790	
Glamorganshire, - - - - -	100	600	250	13 12 8	-	-	290	13 12 8	290	13 12 8	33½	760	2,000,000	1805	
Grand Junction, - - - - -	100	11,600	307	13	218	9	243	13	235	13	93½	143	124,000	1799	
Grantham, - - - - -	150	749	213	9	-	-	210	10	195	9	33½	143	124,000	1799	
Leeds and Liverpool, - - - - -	100	2,897½	395	16	278	10	395	20	405	20	130	841	6,000,500	1774	
Leicester, - - - - -	100	540	325	17	260	10	220	13 10	211	17	21½	230	84,000	1776	
Loughborough, - - - - -	100	70	4,000	200	2,400	119	1,800	180	2,550	180	9½	41	-	1776	
Milton Mowbray, - - - - -	100	250	240	11	170	8½	200	2 10	199	2 10	-	-	-	-	Navigation Inclined planes.
Mersey and Erwell, - - - - -	100	500	825	35	650	30	600	40	525	40	-	-	-	-	
Monmouthshire, - - - - -	100	2,409	215	10	-	-	239	12	208	12	17½	1,057	275,330	1796	
Monkland, - - - - -	100	101	-	-	-	-	90	-	90	-	12	96	-	-	
Neath, - - - - -	100	247	350	15	-	-	300	18	309	18	14	-	35,000	1798	
Nottingham, - - - - -	150	500	290	12	-	-	290	12	245	12	15	-	-	-	
Oxford, - - - - -	100	1,786	670	32	640	32	500	32	510	32	91½	269	330,000	1797	
Shrewsbury, - - - - -	125	500	210	10	-	-	250	11	205	11	17½	155	70,000	1799	
Shropshire, - - - - -	125	500	135	7	-	-	140	8	140	8	74	453	47,500	1792	
Somerset Coal, - - - - -	50	800	170	10	-	-	166	10 10	160	10 10	83	138	185,000	1802	
Stafford and Worcester, - - - - -	140	700	600	40	612	40	760	36	555	36	46½	394	109,000	1772	
Stourbridge, - - - - -	145	500	220	12	-	-	220	11	220	11	5	191	30,000	1776	
Stroudwater, - - - - -	150	200	450	23	-	-	480	23	480	23	8	108	20,000	1796	
Swansea, - - - - -	100	533	230	12 10	-	-	230	15	203	15	17½	366	90,000	1798	
Trent and Mersey, - - - - -	101	2,600	820	37 10	900	75	620	37 10	620	37 10	25	-	185,000	1799	
Warwick and Birmingham, - - - - -	100	1,000	265	12	210	11	220	12	230	12	15	-	130,000	1799	
Warwick and Napton, - - - - -	100	980	205	12	235	10	220	12	210	12	15	-	160,000	1799	
Wyrley and Essington, - - - - -	125	800	160	6	-	-	115	6	115	6	23	270	-	1794	

Prices, at the same dates, of the Stock of Railways, in England.

Liverpool and Manchester, - - - - -	100	5,100	-	-	-	-	181	-	205	8	29½	-	800,000	1830	
Cromford, High Pt. - - - - -	100	1,600	-	-	-	-	-	-	20	-	-	-	-	-	
Canterbury, - - - - -	50	500	-	-	25	-	25	-	35	-	-	-	-	-	
Cheltenham, - - - - -	100	330	-	-	78	-	78	-	78	-	-	-	-	-	
Croydon, - - - - -	65	1,000	-	-	-	-	-	-	-	-	-	-	-	-	
Jersey, - - - - -	60	1,000	-	-	-	-	-	-	-	-	-	-	-	-	
Severn and Wye, - - - - -	50	3,762	-	-	23	1 11	19 10	1 2	17	0 17	-	-	-	-	
Forest of Dean, - - - - -	50	2,500	-	-	45	2 16	45	2 10	33	2 4	-	-	-	-	
Stockton and Darlington, - - - - -	100	1,000	-	-	160	5	200	-	230	6	-	-	-	-	
Monmouth, - - - - -	50	553	-	-	-	-	-	-	-	-	-	-	-	-	
Clarence, - - - - -	100	1,500	-	-	-	-	40	-	65	-	-	-	-	-	

* Price in 1821, from the Monthly Magazine, transcribed from the Report of the Ohio Canal Commissioners, of January 21st, 1824; to which they add the following remark: "From the above it appears that canal stocks in England, of the medium original cost of £1,525, pay a medium dividend of £485, exceeding 31½ per cent. per annum; and are now worth £9,237, more than six times their original cost."

The preceding table, marked C, of the prices of canal and railway stocks, in the London market, at various times, is composed, in part, from the Trade List of the day, which is published weekly, by an assistant clerk of the bills of entry of the British customs, and may be, consequently, deemed to have an official sanction.

The table comprises only thirty-five, of more than one hundred canals in Great Britain, and those the most profitable.

This table furnishes the best, because incontrovertible, evidence of the estimation of canal stocks in England, at the several periods to which it refers, between March, 1821, and November, 1831.

Of the lines of water communication described in the table, that of the Mersey and Irwell navigation, and one other, not included in the table because its stock, the property of a single individual, (the Marquis of Stafford) is not in market, are the channels of trade with which the Liverpool and Manchester railroad enters into immediate competition.

The extension of this railroad from Manchester to Leeds, and to London, would extend its competition to several other canals included in this table, as the Leeds and Liverpool, Grand Junction, Trent and Mersey, the Oxford, and to several others less directly.

It is remarkable, however, that the prices of the stocks of the canals nearest to Liverpool have fallen less than those at a distance from it. While that of the Mersey and Irwell navigation had, in January last, sunk more than £300 on the share, its dividend, far from falling off, had risen ten per cent. beyond that of 1828, and five above that of 1821. The price of its stock is still five and one-fourth times its original cost.

The Leeds and Liverpool canal stock, as well as dividend, had, in like manner, risen, the latter four per cent. since 1821, and ten per cent. since 1828, when the railroad had inspired the greatest alarm; the former, after falling at that period from £395 a share to £278, mounted up again, and was selling on the first of November last, at £405 a share, or at more than four times its original price.

Of the thirty-five lines of improved navigation enumerated in the table, the dividends of the stock of seventeen have been stationary, or very nearly so, for ten years past; six only have sustained any diminution, while as many have sensibly improved in value.

The Loughborough dividend, which was once £200 on the share of 100, and had fallen to £119, had, at the last accounts, again risen to 180, and its stock, which had exceeded £4,000 the share, and had fallen at one time to 1800, was, in the last month, at £2,550 the share.

Although all the canal stocks in England have been affected more or less, in the estimate of their value, by the expected application of steam as the propelling power of railroads, and by the apprehended introduction of railroads in the immediate vicinity of all the most productive canals; but one canal in that country has, as yet, been proposed to be converted into a rail-road, and that from considerations very peculiar to itself.

The length, lockage, and cost of the canals included in the table, are derived from a work of unquestionable authority, by *M. Huerne de Pommeuse, membre de la Chambre des Députés*, originally written in French, and, it is believed, not yet translated into English. Its other facts are from the "*Trade Lists*."

It is obvious, under the circumstances disclosed by this table, that railroad stocks, yielding, on the same amount of capital, a half, a fourth, or a tenth even, of the profit of certain canals in the same neighborhood, would furnish profitable investments for money. And engineers of every description, therefore, and pamphleteers, too, would not be wanting, after the canal system of that kingdom had been already pushed to the utmost limits of its land and water, to recommend railways in preference to canals.

400



